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GLOBAL QUALITY CHANGE THROUGH THE *BABY STEPS* PROJECT FOR
INFANT AND TODDLER CHILD CARE PROGRAMS
IN RURAL AND URBAN UTAH

by

Maegan Lokteff

A dissertation submitted in partial fulfillment
of the requirements for the degree

of

DOCTOR OF PHILOSOPHY

in

Family and Human Development

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2014

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ABSTRACT

Global Quality Change Through the *Baby Steps* Project for Infant and Toddler Child Care
Programs in Rural and Urban Utah

by

Maegan Lokteff, Doctor of Philosophy

Utah State University, 2014

Major Professor: Dr. Ann M. Berghout Austin
Department: Family, Consumer, and Human Development

High quality infant and toddler (IT) child care has repeatedly been linked to better outcomes for children. However, in the U.S., IT child care has also been plagued by poor quality. Using a mixed-methods design, the purpose of this study was to provide an in-depth explanation of quality change in IT classrooms and the myriad of factors that contribute to higher quality. Framed in an ecological model that views quality as the product and interaction of process, structural, and caregiver characteristics, this study addressed the impact of a variety of variables on quality change. The sample was comprised of 86 classrooms nested within 48 centers that participated in *Baby Steps*, a quality improvement project administered by the Utah Office of Child Care. Quantitative data included ITERS-R scores, wages, turnover, capacity, geographic location, and parent fees collected between 2003 and 2010 as part of the *Baby Steps* Project. Seven center directors completed semi-structured interviews that provided an insider perspective on their perceptions of the barriers and contributors to improved quality. A mixed model

analysis was used to examine quality change over time. Results indicate that classroom quality scores (as measured by the ITERS-R) did increase by the second year of participation in *Baby Steps*; however, subsequent years of participation did not lead to significantly higher scores. Specialized training also appears to contribute to higher quality but high turnover was associated with lower quality programs. Non-urban programs appeared to be especially receptive to the intervention. Center directors echoed these findings and spoke to the difficulty of maintaining a trained workforce in light of low wages.

(156 pages)

PUBLIC ABSTRACT

Global Quality Change through the *Baby Steps* Project for Infant and Toddler Child Care Programs in Rural and Urban Utah

Maegan Lokteff

High quality infant and toddler (IT) child care has repeatedly been linked to better outcomes for children. However, in the U.S., IT child care has also been plagued by poor quality. Using a mixed-methods design, the purpose of this study was to provide an in-depth explanation of quality change in IT classrooms and the myriad of factors that contribute to higher quality. Framed in an ecological model that views quality as the product and interaction of process, structural, and caregiver characteristics, this study addressed the impact of a variety of variables on quality change. The sample was comprised of 86 classrooms nested within 48 centers that participated in *Baby Steps*, a quality improvement project administered by the Utah Office of Child Care. Quantitative data included ITERS-R scores, wages, turnover, capacity, geographic location, and parent fees collected between 2003 and 2010 as part of the *Baby Steps* Project. Seven center directors completed semi-structured interviews that provided an insider perspective on their perceptions of the barriers and contributors to improved quality. A mixed model analysis was used to examine quality change over time. Results indicate that classroom quality scores (as measured by the ITERS-R) did increase by the second year of participation in *Baby Steps*; however, subsequent years of participation did not lead to significantly higher scores. Specialized training also appears to contribute to higher

quality, but high turnover was associated with lower quality programs. Non-urban programs appeared to be especially receptive to the intervention. Center directors echoed these findings and spoke to the difficulty of maintaining a trained workforce in light of low wages.

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CHAPTER I

INTRODUCTION

With over 2,000,000 women returning to the workforce within 12 months of giving birth (National Association for Child Care Resource and Referral Agencies, 2012) child care is a major concern for families in the United States. Infant and toddler (IT) child care, however, is problematic, with high costs, poor continuity of providers, and varying levels of global quality being issues that affect both the young children in care and the child care workforce (Ackerman, 2006; Pluess & Belsky, 2009; Whitebook, Sakai, Gerber, & Howes, 2001). Initiatives across the country have attempted to improve the conditions of IT child care. Research on these quality improvement efforts reveal limited success with quality change (Fontaine, Torre, Grafwallner, & Underhill, 2006; Ma et al., 2011; Weinstock et al., 2012). This study uses an ecological foundation (Bronfenbrenner, 1986) to explore six years of data collected as part of Utah's IT quality improvement project, *Baby Steps*, in an effort to understand the barriers and contributors to successful quality change.

Working from the ecological perspective (Bronfenbenner, 1986), with the assumption that improving IT child care quality would improve child outcomes, the Utah Department of Workforce Services (DWS) and the Office of Child Care (OCC) established *Baby Steps* in 2003. *Baby Steps* is a state-wide noncompetitive grant that provides child care centers with additional funding, IT training, and onsite coaching to support teachers and administration in creating developmentally appropriate, high quality environments for infants and toddlers. The goal of *Baby Steps* is to address quality issues

at the various levels that affect the child's experience, including teacher training, administrative support, and the actual environment.

Very few studies have examined quality improvement programs for infants and toddlers (Ma et al., 2011; Weinstock et al., 2012). Of those, none to the researcher's knowledge have compared successful and unsuccessful programs across multiple years of participation. This study provides a unique look at how programs experienced quality change and the factors that differed between those programs that experienced increased quality scores and those that did not.

Since the beginning of the *Baby Steps* project the DWS and the OCC have collected data on participating centers annually, including wages, turnover, parent fees, capacity, and the number of teachers in each classroom. From an ecological perspective these variables represent a variety of factors at multiple levels including factors of the adult environment, center financial structures, and regulations that influence the child's day-to-day experiences and environment (Bronfenbrenner, 1986; Phillips, Howes, & Whitebook, 1992). This study uses these factors as the independent variables. With trained observers the OCC used the Infant/Toddler Environmental Rating Scale-Revised Edition (ITERS-R; Harms, Cryer, & Clifford, 2003) to assess the global quality levels of participating classrooms at the start of the program and annually thereafter. Although a wide range of data was collected, it had not yet been analyzed to determine the efficacy of the *Baby Steps* program.

The first goal of this study was to provide a comprehensive, longitudinal picture of quality change. To accomplish this the research examined initial ITERS-R scores,

wages, turnover, parent fees, geographic location (non-urban or urban), and the number of teachers with an Infant and Toddler Endorsement (ITE; 40-hour training component) among classrooms that experienced increases in ITERS-R scores and those that decreased or maintained scores.

Secondly, through qualitative analyses, this study provides an understanding of how center directors perceive barriers and contributors to quality improvement in IT care. The literature suggests that center quality is closely related to center administrator beliefs and practices (Rohacek, Adams, & Kisker, 2010), but to the researcher's knowledge, no studies have explored center directors' perceptions of quality change specific to IT programs (Ghazvini & Mullis, 2002; Helburn, 1995; Ma et al., 2011; Thomason & La Paro, 2009). Separating center directors by the quantitative data and then comparing center directors' perceptions of identified barriers and contributors to quality change that are not addressed in quantitative evaluations of quality improvement projects.

This is the first longitudinal, quality improvement study to interview center directors about the barriers and contributors to quality that they experienced and to use quantitative and qualitative methods to examine change in child care quality across multiple years. This mixed methods approach provides a richer explanation of quality change in IT classrooms and the myriad of factors that contribute to higher quality.

This investigation makes a significant contribution to the child care literature and specifically to the IT literature. Findings have the potential to inform policymakers within Utah and beyond with regards to quality improvement initiatives. By identifying the differences that exist between centers that made changes in quality and centers that

did not, policymakers may be able to focus limited quality improvement funding on removing the identified barriers.

To understand the differences between centers and center directors' perceptions of quality change, this study examined the following research questions:

1. Did centers improve in quality during the first year on *Baby Steps*?
2. If so, were there baseline differences that related to the improvement?
3. Were there gains in subsequent years of participation on *Baby Steps*?
4. If so, were there earlier differences that related to the later gains?
5. What barriers and contributors do center administrators identify with quality change?
6. Are these qualitative barriers and contributors reflected in the quantitative data?

CHAPTER II

LITERATURE REVIEW

To understand the role of quality and the complexity of creating quality change through interventions in IT center-based child care, it is necessary to understand the importance of high quality experiences for infants and toddlers and the factors that impact it. This chapter provides a review of the theoretical constructs prevalent in child care research and guiding this study. This chapter then highlights the complexity of providing a clear definition of quality in child care. This is followed by a discussion on the importance of high quality child care for infants and toddlers and the factors related to its provision. The chapter concludes with a review of quality improvement initiatives, their methods, and results.

Theoretical Construct

Child care research often uses an ecological model (Bronfenbrenner, 1986) for its underlying theoretical foundation with the idea that multiple spheres of influence, including the child care setting, affect both the child's immediate and long-term development. The ecological foundation has been extended to draw attention to the various factors that can impact the quality of the child care setting, such as geographic location, wages, turnover, subsidy recipients, fees or rates, group size, and ratios (Cryer, 1999; Dunn, 1993; Phillips et al., 1992; Raikes, Raikes, & Wilcox, 2005; Vandell & Wolfe, 2000). This study followed the assumptions of Phillips and colleagues (1992) who suggested that children are nested within the IT classroom which represents its own

microsystem (i.e., classroom environment) and is thus affected by variables within the center and community at the *exosystem* level (i.e., geographic location, wages, turnover, and program fees), which in turn are influenced by the larger *macrosystem* (i.e., state regulated ratios and group sizes).

Similarly, a conceptual framework was developed by Rohacek and colleagues (2010) that suggested that observed quality for any center is connected to the interplay between the available resources to the center and how center administration distributes those resources. This interplay is also influenced by a number of factors that included characteristics of the program and administration, as well as the community factors found at the *exosystem* and *macrosystem* levels.

Drawing on these two ideas, this study used a conceptual model (Figure 1) that theorized that the child care classroom quality was linked with the overall center environment and administrative supports and caregiver characteristics. Furthermore, each center was also influenced by a number of contextual factors that could affect the quality of care within classrooms and a center's ability to make changes to that quality (Cryer, 1999; Goelman et al., 2006; Rohacek et al., 2010).

Traditionally, child care literature has divided quality and the factors associated with it into two categories: structural and process. Structural quality and characteristics are typically defined as those features that are distal to a child's actual experience and more likely found at the *exosystem* or *macrosystem* level. Often these factors are easily regulated by outside entities (i.e., adult/child ratio or maximum group size) but still impact the quality of care. The structural factors that are considered in this research

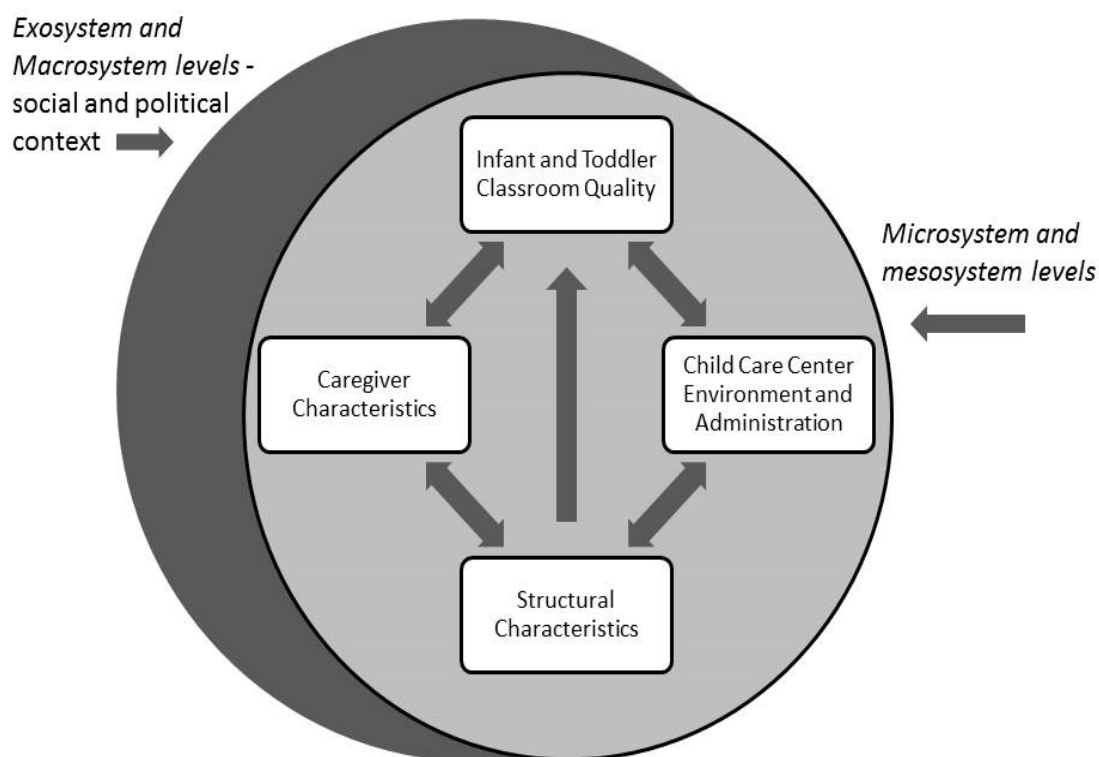


Figure 1. An ecological conception of child care quality and quality change.

include parent fees and geographic location. Though adult/child ratios and group sizes are typically included in considerations of structural variables, this study did not include those because in Utah those are regulated by state licensing and are relatively uniform across centers.

Vandell and Wolfe (2000) describe process quality and characteristics as those attributes that can be observed in the classroom and easily scored on accepted rating scales. These often include the child, adult, and peer interactions, and children's exposure to materials and activities that stimulate development (Cryer, 1999; Dunn,

1993; Goelman et al., 2006; Vandell & Wolfe, 2000). In this study the ITERS-R subscales and total average score are used as a measure of process quality.

Caregiver characteristics are often included in definitions of structural quality as they are often distal to the child's daily experience (Dowsett, Huston, Imes, & Gennetian, 2008; Helburn, 1995; Vandell & Wolfe, 2000). Factors such as wages, turnover, education levels, years in early care, years at a particular center, and ongoing professional development have all been used as typical caregiver characteristics under the construct of structural quality. Available caregiver data for this study included wages and participation in professional development. Child care center administrators also provided a broader definition of caregiver characteristics and how they were perceived as contributing to quality change. Thus, this study considered caregiver characteristics as separate from structural characteristics.

Child care research over the last several decades has repeatedly found that structural, process, and caregiver characteristics relate to and predict the quality of child care and that higher quality care can have positive outcomes for children. However, understanding how these characteristics work together to promote or hinder quality change efforts has remained relatively unexplored (Rohacek et al., 2010). Using the conceptual model in Figure 2 as a guide, this study considered how select structural, process, caregiver, and workplace characteristics impact quality change efforts for IT classrooms. Based on this conceptual model the hypothesis of this study was that differences in characteristics at the onset and throughout participation in *Baby Steps* are related to how much quality improvement is observed at each time point.

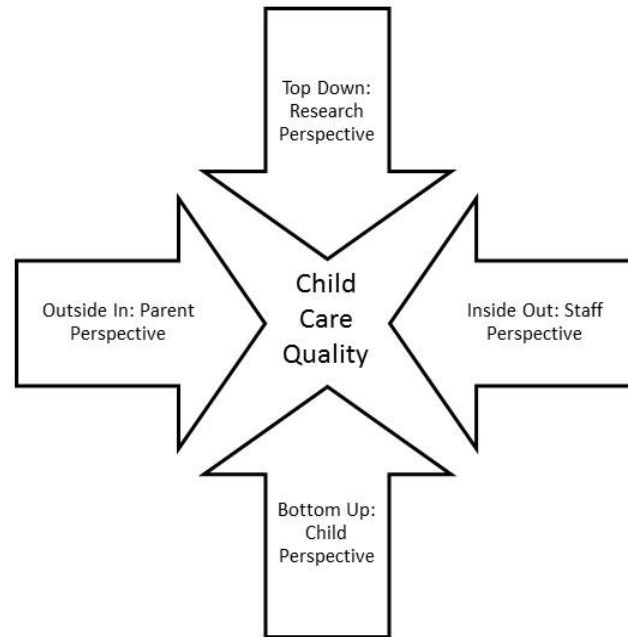


Figure 2. Katz’s model of the perspectives of child care quality.

The second purpose of the research was to gain an understanding of the barriers and contributors to quality change that center directors identified and how these compared to the quantitative data. While the literature provides an understanding of some of the factors that have been related to child care quality, it is the researchers’ belief that there is little to provide a real world perspective on child care, the constraints programs face, and what “great” programs feel they have done to be “great.” Katz (1993) proposed that understanding quality in child care should encompass the multiple experiences and perspectives of those that are affected by it (Figure 2). For example, a top-down perspective usually involves easily measured or quantified aspects of care, such as ratios or quality rating scores. This is the perspective usually adopted by researchers, who in turn inform policymakers (Ceglowski & Bacigalupa, 2002). The inside-out

perspective is reserved for those who work in or administer child care programs. Their perspective would be unique from the perspectives of parents, children, or researchers and may be more centered on relationships with staff members, parents, or the support they receive from sponsoring agencies or other auspices. Like a child embedded within the *microsystem* of a classroom, a child care administrator is embedded within the microsystem of a center and is a part of the classroom *exosystem*, thus influencing the child's experience in child care. For this reason, this study incorporated the top-down perspective with the inside-out perspective. The combination of the available quantitative data, which included ITERS-R scores, caregiver characteristics, and structural features, with the narratives of center directors who have daily experience with IT care provided a richer understanding of the factors that contribute to quality change. Katz's framework provides a natural extension of the ecological framework by recognizing that there are multiple people involved in child care and the provision of quality. By examining the inside-out and top-down perspectives together, this research provides a more complete picture of how to accomplish quality change in IT center-based programs and what real world barriers may exist for programs to achieve change.

Defining and Measuring Quality Child Care

Defining Quality in Child Care

To understand quality change, it is first important to establish a definition for quality in child care. Quality can be an elusive term and is often used to define everything from basic health and safety to caregiver interactions and appropriateness of

environments. An enduring definition of quality in the U.S. was proposed by Cryer (1999) and focuses on child-centered, play-based environments with caring adults. This definition and similar definitions have been used as the basis for quality measurement tools, specifically the ITERS-R. This definition is primarily focused on process quality, or the day-to-day experiences children actually have with their care environments.

While this definition is widely used in the top-down perspective, others have argued that quality is a social construct with unique definitions within each community (Tobin, 2005) or among different stakeholders (Harrist, Thompson, & Norris, 2007; Katz, 1993; Rohacek et al., 2010; Torquati, Raikes, Huddleston-Casas, Boviard, & Harris, 2011). For example, parents often define quality in terms of health and safety characteristics and loving caregivers (Ceglowski, 2004; Ceglowski & Bacigalupa, 2002; Harrist et al., 2007), while policymakers consider state regulations and professional development indicators of quality. Moss and Dahlberg (2008) argued that quality “is an evaluation of conformity” to assumingly universally applied norms, suggesting that the accepted definition of child-centered and play-based environments, and its accompanying indicators, may not always provide the best outcomes for every child.

Though a universal definition of quality may not be appropriate or even practical due to shifting cultural norms, parental feelings, and policy agendas, current accepted definitions and their subsequent tools for measurement should not be disregarded. They provide a foundation for understanding the ecological context that many children experience for many hours every day. For this reason, the researcher applied a definition of quality for IT center-based programs that assumed an environment with

developmentally appropriate materials and furnishings, activities and interactions facilitated by nurturing caregivers, basic health and safety practices, and overriding beliefs that infants and toddlers are active and capable learners.

Measuring Quality in Child Care

While the arguments for quality to be defined and constructed in terms of cultural relevance and localization are valid (Moss & Dahlberg, 2008; Tobin, 2005), the very definition of measurement is to apply a universal standard to observable criteria. Measurements of quality tend to follow Katz's top-down perspective (1993) by delivering quantifiable data on adult-child relationships and interactions, the materials and equipment available to the children, staffing and workplace conditions, and health and safety considerations. Measurement tools are often used as the basis for assessing process quality (Harms et al., 2003; Pessanha, Aguiar, & Bairrão, 2007), while demographics and workforce statistics provide the data for structural quality and caregiver characteristics.

The Infant/Toddler Environmental Rating Scale – Revised Edition

The ITERS-R (Harms et al., 2003), a widely used tool for measuring the quality of IT center-based care, was used to assess quality for classrooms participating in *Baby Steps*. The ITERS-R and its predecessor, the ITERS, have been used for over two decades in IT child care research. To provide clarity to the research results reported in this literature review, a brief discussion of the ITERS-R is provided below. Chapter III

highlights the reliability and validity of the ITERS-R and its use with the *Baby Steps* project.

The ITERS-R is divided into seven subscales, each with individual items to assess space and furnishings, personal care routines, listening and talking, activities, interaction, program structure, and parents and staff. Following Cryer's (1999) definition of child care quality and Katz's (1993) top-down perspective, the seven subscales together provide an overall quality score that emphasizes the materials, interactions, and practices in a classroom environment that supports positive developmental outcomes. The total score, subscale scores, and individual item scores can range from one to seven. A score of one indicates an inadequate environment for children or poor quality care. A score of three demonstrates that the environment is meeting minimal quality standards or providing mediocre care. A score of five represents good quality, and a score of seven is considered high quality.

The ITERS was revised in 2003 to address issues of inclusion and diversity. Specifically, the ITERS-R added items that addressed inclusion, diversity, and language use. Items from the Space and Furnishings subscale that were considered redundant or part of minimum regulations were removed. The notes for clarification were also expanded to provide greater clarity and accuracy for assessors (Harms et al., 2003).

Harms and colleagues (2003) refer to the ITERS-R as measuring process quality due to the focus on what is actually occurring in the child's daily experience. However, Bisceglia, Perlman, Schaak, and Jenkins (2009) argued that the ITERS-R subscales were so highly correlated that they measured the single construct of global quality. The

literature on child care quality often meshes the two terms of global and process quality (Brown, Andrews, & Hutchison, 2008). This may be a result of the ITERS and ITERS-R frequently being used as the dependent variable for the blanket term of “quality.” In most studies that use ITERS-R, structural variables and caregiver characteristics are considered in relation to quality. The ITERS-R provides an assessment of the day-to-day experiences of the children (process quality) by examining the spaces and materials they have available, the activities they engage in, and their interactions with their caregivers. For the purpose of this study, process quality and global quality are considered one and the same, while structural characteristics and caregiver characteristics are assumed to make a contribution to the process/global quality of the classroom.

Real world applications for the ITERS, ITERS-R, and its sister measurements (ECERS, ECERS-R, & FDCRS) often follow Scarr, Eisenberg, and Deater-Deckard’s (1994) suggestion that, though the tools appear redundant, for the purposes of quality improvement in-depth examinations of classrooms are useful as they provide specific items for coaching or enhancement. The DWS’s decision to use the ITERS-R for the *Baby Steps* project supports this argument. For *Baby Steps* each item was rated and specific items were then used to help coach classrooms to improve quality.

The ITERS-R has not yet been subjected to the same criticisms as its sister measure, the ECERS-R. Most likely, this is because few other tools specific to IT care are available. However, it is reasonable to assume that the ITERS-R may be subject to some of the same critiques as the ECERS-R. Specifically, most studies do not cite if they used stop-scoring method prescribed by the ITERS-R authors, or a method where all

items were scored. Gordon, Fujimoto, Kaestner, Korenman, and Abner (2013) highlight how stop-scoring on the ECERS-R potentially deflates quality scores because higher quality practices are not recognized if a classroom has one lower quality practice. This same argument could be extended to the ITERS-R (though no empirical studies have been conducted at this point). The *Baby Steps* project did score all items to provide a resource for improvement, though scores were calculated following the prescribed methods of the authors.

Previous research has made clear connections between quality and child outcomes (Setdoji, Le, & Schaak, 2012) and thus this research and the conclusions drawn from it are based on the assumption that global quality is reflected and measured through tools like the ITERS-R. However, this research also acknowledged that other perspectives should be studied to better understand how quality is perceived in real child care settings. By providing insight into center directors' perceptions of quality and quality change, this inside-out perspective contributes to conversations about the definitions of quality and the tools used to measure it.

The next section of this chapter presents research that has linked quality in child care to child outcomes. Specifically, this section discusses the importance of IT child care quality on developmental outcomes and the prevalence of low quality care for infants and toddlers with the implication that poor quality may lead to poor developmental outcomes.

Developmental Outcomes and Quality of Child Care Experiences

Over four million children under the age of three are in some form of out-of-home child care arrangements, with a majority of children attending center-based programs (National Child Care Information and Technical Assistance Center, 2008). Over half of all child care referral requests are for IT care (National Association for Child Care Resource and Referral Agencies, 2012). As the number of very young children attending out-of-home child care increases, the implications for the effects of care on development have become a primary concern, with quality of care often making the difference between negative effects and positive or neutral effects.

The level of quality in IT center-based child care has been shown to have significant implications for children's immediate and long-term development. Several studies suggest the child care quality during the first three years of life can impact cognitive skills, language, school readiness, social and emotional development, and resiliency to life stress (Barnes, Leach, Malmberg, Stein, & Sylva, 2010; Burchinal, Roberts, Nabors, & Bryant, 1996; Burchinal et al., 2000; Howes & Smith, 1995; Li, Farkas, Duncan, Burchinal, & Vandell, 2012; Pluess & Belsky, 2009; Setodji et al., 2012; Tran & Weinraub, 2006; Vandell & Wolfe, 2000).

IT cognitive skills have repeatedly been shown to be susceptible to varying levels of quality in early care settings. One study found that low-income African American infants attending poorer quality centers as measured by the ITERS, were more likely to have lower cognitive skills, as measured by the Bayley Scales of Infant Development-II (BSID-II; Bayley, 1993), even when controlling for home environment, family

characteristics, and child characteristics (Burchinal et al., 1996). Recently Setodji and colleagues (2013) found similar results when looking at cognitive scores and ITERS scores. In a sample of 500 infants and toddlers from mixed socio-economic backgrounds, specific thresholds for the ITERS were examined in terms of cognitive gain as measured by the BSID-II. Findings indicated that overall ITERS scores that were below 3.8 made minimal significant contributions to cognitive scores as measured by the BSID-II. Classrooms that scored between 3.8 and 4.6 appeared to make a significant contribution to estimated BSID-II scores, though the effect size was small. Classrooms scoring above 4.6, or in the high quality range, did predict higher BSID-II scores, though with a modest effect size. While effect size may be low to modest, this recent study is significant as it directly relates higher quality to increased cognitive functioning.

In examining the timing of quality care, Li and colleagues (2012) found that children who received both high quality IT care and preschool care fared better on assessments for language and problem-solving skills. The sample included 1,364 families from diverse economic backgrounds and geographic locations across the U.S. that had been recruited for the NICHD Study of Early Child Care. Li and colleagues (2012) reported on the quality of caregiving experiences as measured by the Observational Record of the Caregiving Environment (ORCE) at annual intervals from six months to 54 months of age and the relationship with cognitive and language outcomes. Cognitive and language outcomes were assessed using the Bayley (1993) during infancy and toddlerhood. The Woodcock Johnson Cognitive Achievement Batteries (Woodcock & Johnson, 1990) and the Preschool Language Scale (Zimmerman,

Steiner, & Pond, 1979) were used at 54 months. Controlling for maternal depression, family income, and single parenthood, results indicated that for every one standard deviation increase in the ORCE, cognitive outcomes increased by .15 standard deviations at 24 months. In addition, findings also indicated that children who experienced high quality care in infant and toddlerhood and during preschool experienced the most gains in cognitive and language scores by 54 months.

Similar to Li and colleagues' (2012) results that high quality care across time impacted cognitive scores, Tran and Weinraub (2006) suggest that higher quality care can also act as a buffer to the potential detriments of multiple care arrangements. Also using data from the NICHD Study of Early Child Care, researchers found that children experiencing multiple child care settings that ranged from low to mediocre care had lower language scores. However, children that experienced multiple care arrangements that were high in quality had higher language scores (Tran & Weinraub, 2006).

Extending beyond the preschool years, child care quality has also been found to have long term implications for later developmental outcomes. In a large scale ($N = 1364$), longitudinal research project, researchers examined child care quality and its long-term effects on developmental outcomes. By fifth grade, children who experienced early high quality care had higher scores on vocabulary assessments (Belsky et al., 2007). By age 15, results indicated that children who had experienced higher quality care demonstrated higher levels of cognitive and academic functioning while controlling for family characteristics and SES. Like Setodji and colleagues (2013), findings suggest a minimal quality threshold on the ORCE is needed to begin to see increases in cognitive

outcomes. The longitudinal study also found that children who experienced more child care in the early years exhibited more risk-taking and impulsivity at age 15 (Vandell, Belsky, Burchinal, Steinberg, & Vandergrift, 2010).

While these long term effects are significant and appear stable over time, it should be noted that effect sizes are often small. However, as the researchers noted, small effect sizes should not be cause to dismiss the findings for long-term positive outcomes with higher quality child care, as early care is now a normative experience for most young children.

Quality in IT Child Care

Despite research indicating positive developmental outcomes for children receiving high quality care and increasing numbers of young children in out-of-home care, IT programs are often plagued with poor structural and process quality, and the least prepared and lowest compensated workforce (Burchinal et al., 1996; Dennehy & Marshall, 2005; Gerber, Whitebook, & Weinstein, 2007; Ghazvini & Mullis, 2002; Goelmen et al., 2006; Helburn, 1995; Howes & Smith, 1995). Poor quality of care in IT center-based programs came to light in 1995 when a report published on the Cost, Quality, and Child Outcomes Study (Helburn, 1995) found that, while many child care centers provided poor to mediocre quality, almost half of IT programs provided poor quality. Forty percent of all IT classrooms actually exhibited practices that endangered the health and safety of the children through poor sanitation with diapering and feeding and dangerous room environments. Only one in every 12 classrooms sampled

demonstrated care that met the developmental needs of the children by providing materials that supported physical, language, and cognitive development and warm relationships with adult caregivers.

Similar patterns have been found over time and across multiple research studies. Burchinal and colleagues (1996) found that out of 23 IT classrooms, only three classrooms provided quality classified as nearing good on the ITERS, while the majority of classrooms provided minimal to inadequate quality and none were categorized as high quality. Also using the ITERS, Ghazvini and Mullis (2002) found that in a sample of 13 centers, the mean score for classrooms was 3.67 on the 7-point scale, which is classified as minimal or adequate care. Twenty-three percent of classrooms were rated as providing poor or inadequate care. Only 9% of the sample received a rating of good, while none of the classrooms were in the excellent range. While the number of low or minimal quality classrooms is alarming, data using the ITERS may be subject to some of the same critiques as data using the ECERS-R; quality scores may be deflated due to stop scoring methods where the assessor does not score indicators of higher quality once one low quality indicator has been observed for each item (Gordon et al., 2013). However, even if this critique holds true for the ITERS and ITERS-R through empirical analysis, it is still of great concern that most children under three are potentially experiencing care that is not safe or developmentally appropriate.

IT Quality Versus Preschool Quality

IT quality appears to be uniquely separate from quality for programs serving preschool-aged children (Goelman et al., 2006; Howes & Smith 1995; Kryzer, Kovan,

Phillips, Domagall, & Gunnar, 2007; Phillipsen, Burchinal, Howes, & Cryer, 1997; Vandell and Wolfe, 2000). One study found that only 29% of IT classrooms scored in the good quality range while 44% of the preschool classrooms scored in and above the good range (Goelman et al., 2006). Similarly, Howes and Smith (1995) found 22% of IT classrooms scored in the inadequate range for quality compared to only 15% of preschool classrooms. Multiple studies have found that toddlers in child care also appear to experience less supportive and sensitive caregiving, with harsher and more punitive caregivers than their preschool counterparts (Ghazvini & Mullis, 2002; Kryzer et al., 2007; Thomason & La Paro, 2009).

According to the research, providing high quality child care for infants and toddlers is important for later developmental outcomes and current workforce supports. However, obtaining high quality programming can be affected by a myriad of factors, some within the center's control and others in the purview of policymakers and societal mores (Ceglowski, 2004; Goelman et al., 2006; Lokteff & Piercy, 2010; Raikes et al., 2005). The next section discusses the structural, process, and caregiver characteristics that are associated with the provision of quality care. Specifically, this review will consider the structural and caregiver variables proposed in the *Baby Steps* project including geographic location, subsidy receipt, and turnover.

Structural Factors and Their Relationship to Child Care Quality

While IT child care is often characterized as low quality, previous research has suggested that structural factors may impact the provision of high quality care for centers

(Bigras et al., 2010; Goelman et al., 2006; Pessanha et al., 2007; Raikes et al., 2005).

This study examined how the structural variables of geographic location, parent fees, and turnover may impact the effectiveness of the *Baby Steps* interventions. While these variables and their relationship to quality have been studied in previous research, few studies have examined their relationships specifically with IT care or in relationship to quality change efforts.

Geographic location. Previous research suggests that rural programs are at an increased risk of providing low quality care with two studies showing a majority of care in rural and non-urban areas falling in the minimal quality range (Austin, Lindauer, Rodriquez, Norton, & Nelson, 1997; Brown et al., 2008). IT care in rural areas also appears to have higher adult/child ratios, a primary predictor of quality in IT classrooms, than similar programs in non-rural areas (Maher, Frestedt, & Grace, 2008). Likewise, child care programs serving children living in impoverished areas, which may be associated with rural populations, also appear to provide lower quality care (Hillemeier, Morgan, Farkas, & Maczuga, 2013). With limited research on IT care and the diversity of urban and rural populations in the *Baby Steps* sample, this study provides further insight into how geographic location may impact quality change efforts.

Subsidy receipt. Despite research linking subsidy receipt to quality, few studies have focused solely on IT programs. While the data on subsidy receipt for the classrooms participating in *Baby Steps* was too minimal to be adequately used, a discussion of the role of subsidy receipt is included here to highlight the numerous and complex factors involved in predicting child care quality.

A 2004 study found that centers with lower percentages of subsidized children provided higher quality in terms of interactions and activities (Jones-Branch, Torquati, Raikes, & Edwards, 2004). However, the researchers, while making center-based claims, only measured quality at the preschool level using the ECERS. More recently researchers have suggested that this relationship may only be apparent in preschool classrooms and not relevant to quality in IT classrooms (Antle et al., 2008). In a sample of 91 programs (47 infant/toddler classrooms and 44 preschool classrooms) Antle and colleagues found unique relationships between subsidy density and ITERS-R and ECERS-R scores. Specifically, no significant correlations were observed between the ITERS-R and subsidy receipt. Teacher salary appeared to be the best predictor of higher ITERS-R scores and explained over 50% of the variance in total ITERS-R scores. However, researchers found that in a large multi-state sample, infants, toddlers, and preschoolers in center-based care did experience higher child/adult ratios in programs that served more subsidized children (Maher et al., 2008). Higher child/adult ratios are often a key structural variable when predicting quality with higher ratios being observed in lower quality IT classrooms. The mixed results of subsidy density may indicate that the relationship between subsidy receipt and quality is not linear, but instead impacted by other factors.

Turnover and wages. Turnover can be problematic in early care settings as the consistency of caregivers can impact the quality of the setting and child outcomes making it both a product of structural characteristics and process or caregiver characteristics (Ahnert, Piquart, & Lamb, 2006; Cryer, Hurwitz, & Wolery, 2000; Helburn, 1995;

Whitebook, Howes, & Phillips, 1998). One study found that high rates of turnover among caregivers/teachers can have detrimental effects on children, leading to increased aggression and social withdrawal (Howes & Hamilton, 1993). Over time, studies have also found that the remaining caregivers feel additional stress from the process of retraining new hires or picking up the responsibilities of an absent coworker, which can lead to even more turnover (Hale-Jinks, Knopf, & Kemple, 2006; Whitebook & Sakai, 2003). With caregivers feeling more stress, as well as large numbers of untrained or newly trained caregivers, the quality of care is likely to suffer.

While wages are primarily considered a caregiver characteristic, the pervasive low wages in the child care workforce are closely linked with high turnover and thus are discussed in this section (Ackerman, 2006; Whitebook et al., 1998; Whitebook & Sakai, 2003). Traditionally even the highest paid teachers in early care settings make significantly less than most public school teachers (Whitebook et al., 1998). According to the Center for the Child Care Workforce, child care teachers in the U.S. make an average of \$19,264 annually, with Utah ranking 39th (average wage \$8.76/hour; American Federation of Teachers, 2010). Low wages are repeatedly cited as the cause for teachers with the highest levels of education and training to leave the workforce (Kovach, 2008; Manlove & Guzell, 1997; Whitebook & Sakai, 2003). In a recent survey of 55 pre-service early childhood education majors, Thorpe and colleagues (2011) found that low pay was the primary barrier that kept most teachers from considering work in child care. Similarly, in a Wisconsin survey of 414 licensed child care programs, half of which were centers, low wages was the most common reason for staff members to leave

their positions (Kovach, 2008). Of the centers that served infants, toddlers, and preschool-age children, 53% reported that they experienced difficulties in attracting staff members with degrees due to low wages.

Likewise, higher wages, often a result of program business type and funding streams, may predict higher quality child care across age groups (Akerman, 2006; Gerber et al., 2007; Kovach, 2008; Pessanha et al., 2007). However, in a study of 239 child care centers across Canada, Goelman and colleagues (2006) found that this relationship may be more pronounced with preschool-age children. According to their findings, ITERS quality scores were most directly influenced by teacher education and number of adults. However, as indicated in the Wisconsin survey (Kovach, 2008), the ability to attract highly educated teachers into IT care may be directly related to wages. This may be evident in a recent analysis of data from the Delaware Early Care and Education Baseline Quality study. Researchers found that among the 62 participating centers for every unit increase in hourly wage, ITERS scores increased .44 (St.Clair-Christman, Buell, & Gamel-McCormick, 2011). These results, though counter to Goelman's findings, lead to the conclusion that higher wages and higher quality IT care are closely related. The wage and turnover data available with the *Baby Steps* project, along with the director interviews, contribute to a clearer picture of how wages and turnover work together and their relationship with quality in IT classrooms.

Caregiver Characteristics and the Relationship to Child Care Quality

Poor quality IT care is also associated with the IT caregiver workforce. Beyond

turnover and wages, caregiver characteristics such as education, in-service professional development, feelings of professionalism, and workplace satisfaction and supports, play a significant role in the overall quality of a child care program (Ghazvini & Mullis, 2002; Helburn, 1995; Miller & Bogatova, 2009; Phillipsen et al., 1997). Several workforce studies have found that IT caregivers typically receive the least training and are the poorest educated within the early childhood workforce (Dennehy & Marshall, 2005; Gerber et al., 2007; Goelman et al., 2006; Miller & Bogatova, 2009; Whitebook & Sakai, 2003).

Training and education. The *Baby Steps* data is sparse in terms of recording caregivers' educational levels or previous training. However, training and education have long been cited as valuable contributors to quality at the preschool level and many studies have suggested that the same relationship exists with IT care (Burchinal, Cryer, Clifford, & Howes, 2002; Fukkink & Lont, 2007; Goelman et al., 2006; Vu, Jeon, & Howes, 2008). Specific IT training, as in the case of the *Baby Steps* project, and creating pathways to increasing education are also two common methods used in quality improvement efforts. Thus results of training and education are discussed here as an important caregiver characteristic that may contribute to quality in IT classrooms.

Only one third of IT teachers are reported to have specialized training in child development and only 18% have a bachelor's degree in early childhood education or a similar field (Miller & Bogatova, 2009). The low number of teachers with specialized training or degrees may be of concern in terms of improving the quality of IT care when taking the following research into account. Using data from the nationally representative

Early Childhood Longitudinal Study – Birth Cohort (collected at the 24 month wave), Halle, Forry, Hair, Westbrook, and Dwyer (2009) found that toddler caregivers with the lowest level of education (completion of a high school degree) are most likely employed at centers with higher adult/child ratios, a key predictor of lower quality in IT care. Conversely, caregivers with a bachelor's degree were typically employed at centers with the lowest adult/child ratios.

In a study of 533 IT classrooms it was found that, when controlling for adult/child ratios and subsidy density, education levels and ongoing training were significantly related to quality scores and child outcomes (Burchinal et al., 2002). Specifically, the study found that teachers with a bachelor's degree had classrooms that scored significantly higher on the ITERS than teachers with any other type of formal education, including an AA or some college courses in early childhood. Caregivers with a bachelor's degree were also more sensitive to the children's needs, as measured by the Caregiver Interaction Scale (CIS; Arnett, 1989).

Burchinal and colleagues' (2002) findings have been repeated over time and educational level does appear to have a unique contribution in predicting the quality of IT care. Using a sample of 239 child care centers across Canada (122 IT classrooms), Goelman and colleagues (2006) found that higher educational levels along with number of adults in the room, were the only two direct predictors of higher ITERS scores, whereas the preschool aged counterparts also had wages and job satisfaction predicting higher quality. Similarly, Bigras and colleagues (2010) found that in a sample of 53

centers and 36 family child care homes, specialized training in early childhood, in the form of an early childhood education diploma, predicted higher IT quality.

Despite the suggestion that teacher education levels play a significant role in IT classroom quality, some studies report different findings. In a sample of 964 center providers from four Midwest states, education and training predicted higher compensation for IT teachers but it did not predict higher quality as it did for its preschool counterparts (Torquati, Raikes, & Huddleston-Casas, 2007). Torquati and colleagues suggested that more highly trained teachers may have more flexibility in terms of selecting a position with the most personal rewards, thus routing the relationship between education and quality through wages or compensation. Vu and others (2008) echo this conclusion by suggesting that the mixed results of education levels and the impact on quality could indicate that the links between education and quality may travel through other variables. They suggest that supportive workplace environments or programs funded under umbrella agencies may moderate the relationship between education, training, and quality. For example, programs operating under large umbrella agencies (such as the YMCA or employer-sponsored child care) may provide a different type of workplace environment than programs operating as for-profit, though little research has been done to empirically explore these relationships.

Professional development. Several studies have found that in-service professional development may be related to quality, separate from education level. In the same study of 533 IT classrooms discussed above, Burchinal and colleagues (2002) also found that while higher levels of formal education were associated with higher quality

classrooms, in-service training also had a significant effect on classroom quality. Most importantly, the effects of attending in-service trainings appeared to be separate from the effects of education level with no difference in effect size among caregivers with varying education levels. However, Burchinal and others (2002) noted that those without degrees were caregivers in classrooms that scored lower on quality measures than those with degrees.

In a meta-analysis of 15 studies focused on in-service training in early care and education, Fukkink and Lont (2007) also noted that, like education levels, in-service professional development has had mixed results in terms of the relationship with quality. The authors noted that current research had not fully answered how training affects caregiver competencies and practices in the classroom. Examining studies from 1980 to 2005, Fukkink and Lont (2007) found that training appears to have a modest positive effect on caregiver knowledge, skills, and professional attitude across age groups. However, universally administered training programs that are delivered to a wide audience are not as effective as specialized training (such as an IT course for IT caregivers). Similar to education levels, it could be concluded that the effects of training on quality may also travel through other variables, such as wages, workplace supports, and program auspices (Fuligni, Howes, Lara-Cinisomo, & Karoly, 2009; Torquati et al., 2007).

Much of the research on professional development is limited to caregivers at the preschool level and does not include IT caregivers. Zaslow, Tout, Halle, Whittaker, and Levelle (2010) highlighted that future research needs to examine effective strategies for

professional development among IT caregivers.

This study specifically addresses the possible relationship between specialized in-service training and quality outcomes by examining whether caregivers who completed the specialized ITE were more likely to be in classrooms with higher quality scores and if other structural variables make a contribution to any existing relationship. In addition, the mixed methods employed in the proposed research provide an understanding of the different pathways the effects of training have on quality in child care. This study contributes to the literature by increasing our understanding of in-service training and quality change efforts for IT classrooms, particularly from the stand point of the program administrator.

For the purpose of simplicity, the above section has focused primarily on research relating to in-service training for center-based teachers. Like *Baby Steps*, several recent studies have examined in-service training and mentoring/coaching as part of interventions designed to improve quality in center-based child care. These studies are discussed in detail beginning on page 38.

Professionalism, commitment, and workplace environment. A few studies have begun to examine the roles other workforce characteristics may have in providing high quality child care. These variables are not included in the present study, but will be reviewed briefly here. They include feelings of professionalism, commitment to the field, and perceptions of the workplace environment. In a sample of 540 teachers in centers with IT classrooms and preschool-aged classrooms, Mims, Scott-Little, Lower, Cassidy, and Hestens (2008) found that, in addition to teacher education, teacher stability

within a classroom also served to predict higher quality classrooms. This finding echoed the results that turnover, which leads to teacher instability, may create stress on remaining teachers and thus lead to lower quality (Hale-Jinks et al., 2006; Whitebook & Sakai, 2003), supporting the hypothesis that factors beyond education level may play a role in the provision of high quality care.

In an analysis of the NICHD Study for Early Care, Thomason and LaParo (2013) found that in a sample of 740 IT teachers, aspects of teacher commitment were predictive of the level of emotional and cognitive support in the classroom. Specifically, findings indicated that along with education, years in the field, membership in a professional organization, and perceptions of the job being a long-term career all significantly predicted a higher level of emotional support in toddler classrooms (15 to 36 months). Cognitive support in the toddler classrooms was predicted by job satisfaction and years in the field. Commitment was also found to predict feelings of professionalism (Martin, Meyer, Jones, Nelson, & Ting, 2010), although the researchers did not link feelings of professionalism with quality scores. Similar to commitment to the field, Thorpe, Boyd, Ailwood, and Brownlee (2011) found in their survey of pre-service teachers that those who were willing to consider child care a long-term career were distinguished in their cohort as being more altruistic and demonstrating a greater understanding of the importance of the early years.

While research on the role of professionalism, commitment, and workplace supports is limited, results from the above studies would suggest that these broader teacher characteristics play an important role in the provision of quality. Director

insights from this study will continue to add to the discussion of how these variables relate to quality.

Center Directors and Their Contributions to Quality

While caregiver characteristics and structural variables play an important role in the quality of child care classrooms, there is a growing understanding of the importance of the organizational climate of a center, which is often driven by the center director. The next section of this chapter will consider the limited research on center directors and their contributions to quality in IT care.

Like their work with caregivers, Mims and others (2008) also found that among 231 center directors, directors' education levels provided a unique contribution to classroom quality across age groups. Directors who were enrolled in a college level early childhood course during the assessment period oversaw centers that were more likely to experience positive quality change. Similarly, Lower and Cassidy (2007) found that director education was closely linked to overall program administration and global quality across age groups in a sample of 26 centers. Individual classroom quality across age groups was typically higher in centers with a director who held a minimum of a bachelor's degree (degree type was unspecified). While this may come as little surprise to early childhood professionals, the research on center directors and their contributions to quality within their center is relatively limited. It is also important to note that the similarity of these results may be due to both data sets being derived from the North Carolina Rated License Assessment Project.

In Australia, Brownlee, Berthelsen, and Seagran (2009) completed a qualitative study that examined six Australian center directors' beliefs about infant child care quality and found that directors typically described quality using words like "caring" and "loving." Most of the directors valued links between the home environment and the center and recognized that promoting secure, trusting relationships with the infants and the parents created better outcomes for the children. While the study did not specifically examine efforts to change quality, it did address how directors felt about the available professional development for IT care. The responses overwhelmingly suggested that more training focused on infants and toddlers was needed.

One study (Rohacek et al., 2010) also examined center director beliefs about quality and the relationship between these beliefs and measured preschool classroom quality. Directors from 38 centers were asked through a variety of questions to define their perceptions of child care quality. Analysis of the interviews found wide variance among directors' beliefs with some defining quality as meeting the more basic health and safety needs of children and others defining quality in terms of relationships and child outcomes. When the director responses were compared to measured ECERS and CLASS scores, those directors who defined quality in terms of basic needs had classrooms with lower quality scores than directors who defined quality through informed beliefs and a current knowledge base.

Center directors were also asked to identify factors that contributed to or hindered quality within centers. Results suggested that when identifying factors associated with quality, higher scoring centers on the ECERS and CLASS gave several common

responses. Specifically directors had higher expectations for staff qualifications and staff outcomes, provided more staff support, had more financial resources, emphasized staff wages, benefits, and training, and looked to criteria beyond licensing standards to inform practice. Conversely, directors with lower scoring classrooms had lower expectations for staff, significant financial constraints, used children's safety needs to guide programmatic decision-making, and used licensing requirements to shape practices (Rohacek et al., 2010).

Despite widespread recognition that directors play a significant role in the quality outcomes for their center, few studies have examined their beliefs, the specifics of their role, or the impact their perceptions of quality may have on observed quality. The studies above are the only two recent studies known to the researcher to assess qualitatively the center director's perceptions of quality. While Brownlee and others (2009) focused specifically on IT quality, the researchers did not relate director's perceptions of quality to observable quality measures for the IT classrooms. In contrast, Rohacek and colleagues (2010) did relate director's perceptions with quality scores, but with a limited focus on classrooms serving preschool children. One tenet of the proposed research is that center directors may have a unique insight into quality and quality change for IT classrooms. This study provides additional insight into the relationship between center director's perceptions of quality and quality change processes in IT care and actual observed quality of the IT classrooms.

Evaluating Quality Change Efforts

Despite a growing understanding of how structural and caregiver characteristics impact the quality of IT child care, there is still wide debate on how to achieve quality change in programs. Quality improvement initiatives across the country using varied assessment strategies have examined a variety of methods for improving quality, including mentoring and coaching, in-service training, professional development incentives, and enhancement grants. Not surprisingly, the work has had mixed results (i.e., Fontaine et al., 2006; Ma et al., 2011; Weinstock et al., 2012) as discussed in this section.

Nationally, over 30% of children with Child Care and Development Block Grant funding (CCDBG) are under the age of two. Over \$104 million CCDBG dollars were earmarked for infant and toddlers in 2010 (Matthews & Firgens, 2012). The federal Child Care and Development Fund (CCDF), which administers CCDGB funding, and state-led quality improvement initiatives have focused spending on improving the quality and accessibility of IT child care. Most quality improvement projects rely on a combination of training, mentoring or coaching, and on grants to enhance the child care environment. The assessment and evaluation of the effectiveness of these projects also varies. This section discusses the methodology and findings of IT center-based quality improvement projects. Table 1 provides a summary of the projects including sample sizes, assessment tools, and variables measured in each project.

Table 1

IT Quality Improvement Evaluations

Study	Type of study	N	Attrition	Variables (other than quality)	Quality measurement tool	Statistical techniques
Biringen et al., 2012	Experimental Pre- post-design	57 teachers	N/A	Professional development; education levels; child characteristics; demographics	CIS; Attachment Q-Sort; EA scales	Independent <i>t</i> tests, repeated measures ANOVA, correlations, repeated measure ANOVA
Brown et al., 2008	Quasi-experimental Pre- post-design	19 teachers 10 centers	None	Pre- and post-ITERS-R scores	ITERS-R	Paired sample <i>t</i> tests
Campbell & Millbourne, 2005	Experimental Pre- post-design	114 classrooms	16%	Demographics; education	ITERS; CIS	Two way repeated measures ANOVA
Korkus-Ruiz et al., 2007	Quasi-experimental Longitudinal Pre- post-design	45 teachers 6 centers 9 family child cares	None	Pre- and post-environmental rating scale scores	ITERS; ECERS-R; FCDRS; CIS	Repeated Measures <i>t</i> tests
Ma et al., 2011	Quasi-experimental Longitudinal Pre- post-design	47 centers 84 centers	72% 29%	Time	ITERS; ITERS-R; ECERS; ECERS-R	Repeated measure mode with <i>f</i> tests, multiple regression
Miller & Bogatova, 2009	Longitudinal Pre- post-design	946 teachers	43.5%	Demographics; # of years in child care; employer; age of children under care; education level; desired education level; work environment; professional activities; knowledge and beliefs about ECE; turnover; compensation	ECERS-R; ITERS; ITERS-R; CIS	Independent sample <i>t</i> tests, paired sample <i>t</i> tests, and effect size
Radnai-Griffin, 2011	Mixed methods Experimental Pre- post-design Qualitative	15 teachers 2 EHS centers	0.07%	Demographics; education; years teaching in ECE; years teaching infants and toddlers; position; years in EHS centers	ITERS-R; Knowledge of infant development inventory (KIDI)	Repeated measure <i>t</i> tests and qualitative methods
Uttley & Horn, 2008	Quasi-experimental Pre- post-design	41 teachers 15 centers	N/A	Measurement tools; staff turnover; wages; education levels; length of employment; in-service training	ECERS-R; ITERS-R; Family questionnaire; demographic survey	Repeated measure <i>t</i> tests

(table continues)

Study	Type of study	N	Attrition	Variables (other than quality)	Quality measurement tool	Statistical techniques
Weinstock et al., 2012	Experimental “intent to treat” design	92 centers 159 family child cares 936 children	86% N/A 60%	Caregiver knowledge; program operations; caregiver education; enrollment; caregiver professional development	Bracken School Readiness Assessment (3 rd ed); Preschool Language Scale (4 th ed); Child behavior checklist; ITERS-R; FDCRS; PITC; Program assessment rating system ECERS; CIS	Hierarchical linear Regression
Whitebook et al., 2004*	Longitudinal Pre- post-design	43 centers 68 classrooms	N/A	Parent fees; subsidy rates; enrollment; turnover; staff ages; staff education levels; wages; length of time in the field; professional development; working conditions		

*Whitebook et al., 2004 was focused on Preschool-aged programs, but used a design and analysis similar to that which was used with the *Baby Steps* data.

Quality Improvement Projects With an Experimental Design

The majority of research and evaluation of quality improvement initiatives for IT care have been quasi-experimental and have relied on a pre-post design to assess whether the program led to quality improvement. Although a treatment and control group design is not considered the strongest assessment, only four studies have used this method to assess the results of quality improvement efforts (i.e., Birigen et al., 2012; Campbell & Millbourne, 2005; Radnai-Griffin, 2011; Weinstock et al., 2012).

Using a sample of 180 IT teachers from 114 classrooms and 60 child care centers, Campbell and Milbourne (2005) assessed the effects of professional development training with and without onsite coaching on IT classroom quality. Specifically the study assessed if quality results were different between one group that received training only and one group that received the onsite coaching along with the training component. Eighty-four percent of the classrooms received both pre- and post-assessments of quality using the ITERS and the CIS.

Campbell and Millbourne (2005) used what they termed “observable change” to code each of the classrooms to determine if quality change was different in classrooms that had received the training versus those that had also received the onsite coaching. Similar to the thresholds for cognitive gains found by Setodji and colleagues (2013), classrooms with scores below 3.0 were labeled as inadequate, classrooms between 3.0 and 4.99 were labeled as adequate, and scores that were 5.0 or above were labeled as good. Classrooms were coded in the same manner after the intervention. Observable change was noted if a classroom moved from one category to another or if the mean

differences were greater than one point (out of seven).

Findings from the Campbell and Millbourne (2005) study indicated that, overall, the group that received on-site coaching had positive changes in their quality scores, while the group with only training actually decreased in quality over the course of the study, though the actual difference between the groups was not significant. In addition, observable change was reported in 15 (21%) of the classrooms that received coaching. Only two (7.7%) of the training-only classrooms were reported as having experienced observable quality change. Campbell and Millbourne conclude that, despite wide spread training recommendations and requirements, training alone is not enough to change quality in IT classrooms.

In a more recent evaluation, Weinstock and colleagues (2012) also used an experimental design with an intent-to-treat group for comparison in assessing the effectiveness of the *Program for Infant/Toddler Care (PITC)* in raising IT child care quality and improving child outcomes. Unlike Campbell and Millbourne's (2005) program, the *PITC* program included 64 hours of training on infants and toddlers and 40 hours of on-site technical assistance/support delivered over a 10 to 18 month period. The study included 92 child care centers and 159 family child care programs. The study used composite scores of the *ITERS* and the *Family Child Care Environmental Rating Scale (FCCERS)* to measure global quality. Composite scores for measuring child cognitive/language development and social emotional development were also used in assessing the impact *PITC* had on child outcomes. Hierarchical linear regression models found that there were no statistically significant effects on global quality or child

development outcomes for programs that participated in *PITC* compared to the comparison group.

While these results may be disheartening in terms of improving quality, further analysis of the implementation of *PITC* found that only 42% of centers completed the full training and just under 50% of the children remained in their care situation long enough to experience any potential effects from the program. High attrition of participants was a common issue for several of the studies reviewed in this section. Ma and others (2011) reported that 72% of IT centers did not complete all phases of the study. Weinstock and colleagues (2012) note that high attrition highlights the challenges of maintaining participation in long-term interventions that are geographically spread out. This is a similar challenge for the *Baby Steps* program and is discussed in Chapter III with regards to the sample.

In a small scale study, Radnai-Griffin (2011) sought to understand how a professional development intervention focused on increasing literacy and language development for infant and toddlers impacted the environment and caregiver practice. Like the current research, Radnai-Griffin used a mixed methods approach and looked at both quantitative assessments of classroom quality and teacher interactions using the *ITERS-R* and semi-structured interviews with 14 teachers and assistant teachers. The sample was comprised of two Early Head Start centers, one receiving the treatment from the researcher and one continuing as normal.

Results from the quantitative analysis indicated that the treatment centers saw significant increases in the *ITERS-R* subscales of listening and talking (increased from

4.44 to 6.78), activities (increased from 3.55 to 5.11), and space and furnishings (increased from 3.47 to 6.33), when compared to the control center. The qualitative analysis suggested that the caregivers found the onsite mentoring to be especially useful in terms of implementing changes. However, the very small sample size (only 15 teachers in two centers) and the fact that the researcher also delivered the training and mentoring limits conclusions about the effectiveness of the professional development program on raising the quality of the IT classrooms.

Similar to Radnai-Griffin's focused intervention on literacy and language, Biringen and colleagues (2012) assessed the impact of a training focused on improving the emotional climate of IT classrooms. This study considered several variables including caregiver education levels, professional development activities, and the child's background. Thirty-three caregivers received two 1-hour trainings at their centers that focused on emotional availability in the classroom. The caregivers also received three to four coaching visits to practice skills with regard to emotional availability. For comparison an intent-to-treat control group received the same classroom assessments.

Though Biringen and colleagues (2012) used different quality measurement tools than the Radnai-Griffin (2011) study, quality improvement findings were in the same positive direction for the 33 teachers who received training and coaching. Results found that child responsiveness significantly improved in treatment group classrooms, while it actually decreased in the control group classrooms. Similarly, sensitivity and involvement also improved, though not significantly. According to the CIS, hostility decreased in the treatment group, but increased in the control group. Though this study

did not use the ITERS or ITERS-R to assess quality, it is one of the few that, because of its experimental design, can make claims about the effectiveness of training and coaching for improving quality, especially in terms of emotional availability.

Quality Improvement Projects With a Quasi-Experimental Design

Far more quality improvement research has used a quasi-experimental design rather than an experimental design. The research on IT care is limited and provides mixed results about the effectiveness of quality change efforts. For example, like Radnai-Griffin (2011) and Biringen and others (2012), Brown and colleagues (2008) found significant improvements in ITERS-R scores for rural child care centers after participation in the *BASICspaces Pilot Project*. Like *Baby Steps*, the *BASICspaces* project provided training, onsite mentoring, and enhancement grants meant to assist in creating high quality environments. The researchers provided a comparison of ITERS-R means from pre-and post-participation and found that overall mean scores doubled, moving from 2.6 to 5.29, taking most programs from being classified as providing minimal quality to providing good quality. They also saw significant increases in all of the subscales: personal care routines (increased from 1.52 to 5.7), listening and talking (increased from 3.46 to 6.20), interactions (increased from 3.85 to 6.20), space and furnishings (increased from 2.74 to 5.24), program structure (increased from 2.66 to 4.75), and activities (2.30 to 4.10).

Brown and colleagues (2008) noted that while it is encouraging that quality improved, two different explanations may be at the root of quality change. All programs

received enhancement grants to complete major remodels and purchase additional materials. These additions alone can increase some ITERS-R subscale scores without any input from caregivers. Also, like the centers in the *Baby Steps* project, the centers involved in the *BASICspaces Pilot* self-selected to participate and thus may have been more inclined to make quality changes.

Some quality improvement projects have been focused on mentoring, rather than on training or enhancement grants. Two studies assessed the impact of a mentoring project on quality by comparing pre- and post-means on quality rating scales across age groups (Korkus-Ruiz, Dettore, Bagnato, & Ho, 2007; Uttley & Horm, 2008). Korkus-Ruiz and colleagues found that mean ITERS scores increased from 4.59 to 6.69 for participating centers over five measurement points; however by the fifth measurement the sample had decreased to only six out of the original ten IT classrooms within six centers. It should be noted that the mean baseline score in this study is relatively high and no information is given about assessor training or inter-rater reliability.

Uttley and Horm (2008) reported results from an evaluation of the *Rhode Island Child Development Specialist Apprenticeship Program* that paired apprentice teachers with more experienced mentor teachers. Only six IT classrooms were included in the study. Uttley and Horm reported that ITERS scores increased from time one (4.59) to time two (5.16). This is just over a half a point increase and no statistical significance is reported.

In a comprehensive evaluation of the *Teacher Education and Compensation Helps (T.E.A.C.H.) Early Childhood* project Miller and Bogatova (2009) collected data

on a wide variety of variables including teacher demographics and classroom quality scores. Caregivers across age groups received scholarship assistance to attend courses aimed at the completion of a CDA, associate's degree, or bachelor's degree. Overall, completion rates for the program were low with only 57% of the original 946 participants completing a degree or CDA. Using the ITERS and ITERS-R, Miller and Bogatova assessed how quality changed in participants' classrooms over the course of the program. Results indicated that mean ITERS scores significantly increased over time for participating caregivers. Those rated on the ITERS increased from an average 3.70 at time one to an average of 5.30 at time three. At time three, several of the IT classrooms were assessed using the ITERS-R, and these had a lower mean score than classrooms assessed on the ITERS at time two. Whether it is coincidental or specific to the ITERS-R is unknown. There were smaller increases between time three and time four, going from 3.77 to 4.15.

In an analysis of the subscale scores for the ITERS from time one to time two, the space and furnishings subscale, which increased from 3.10 to 4.17 and the interaction subscale, which increased from 5.35 to 5.93, were the only two that saw significant increases. The remaining subscales, including personal care routines, activities, program structure, listening and talking, and provisions for parents and staff, though increasing, did not change significantly. It should be noted that the researchers for this study had much lower ITERS scores at baseline when compared with the scores in the previous two studies. Again, there is no reported information on how assessors were trained or what was done for inter-rater reliability. One possible explanation is state-to-state difference

in minimal licensing standards that may have an impact on ITERS and ITERS-R scores with programs in one state scoring relatively high due to higher licensing standards.

In a larger scale assessment of a county level Quality Improvement System (QIS) in Florida, Ma and colleagues (2011) ascertained that, in a sample of 47 centers with IT programs, quality in IT care improved. Specifically, the “activities” subscale and the total ITERS scores improved significantly from the baseline assessment to the follow up assessment. Like the *T.E.A.C.H.* study, Ma and colleagues also used both the ITERS and ITERS-R in their assessments. Unlike Miller and Bogatova’s (2009) research, Ma found that programs assessed with the ITERS-R experienced greater increases in quality scores over time (increased from an average of 3.11 to 5.28), with strong effect sizes (.74 to .84). They claimed that the significant changes in the ITERS-R scores can be attributed to a center’s QIS start date. Regression analysis revealed that quality improvement scores increased by .46 for each year after the QIS began. In other words, those that began the program later did better in terms of making quality changes, with the researchers implying that the QIS model for quality improvement became better over time.

One final study focused on NAEYC accreditation support and attainment as a route to quality improvement (Whitebook, Sakai, & Howes, 2004). Though this study focused on classrooms for preschool-aged children and used the ECERS for assessment of quality, it is discussed here to draw attention to the methods used to assess quality change. Whitebook and others provide a model for analyzing quality change that represents “substantial” and “sustained” improvement and moves beyond comparing

mean scores for statistical difference. They calculated a dichotomous variable using the change in environment rating scores from time-one to time-two, with those programs that were at least one standard deviation higher at time-two as experiencing “substantial quality.” In the same way programs were recoded as “sustained quality” from time two to time three if they did not decline more than one standard deviation point.

Whitebook and colleagues (2004) found that centers participating in an accreditation support group were more able to improve and maintain quality than centers seeking accreditation on their own or those not seeking accreditation at all. Once centers were coded as having a substantial quality increase or a sustained quality increase, Whitebook and others also examined if centers differed on structural and caregiver characteristics. Results indicated that programs with lower turnover were more likely to experience substantial quality change.

Along with the methods used by Campbell and Millbourne (2005), Whitebook and colleagues (2004) provided an analysis model that better highlights distinctions in classroom quality improvement. For example a classroom may receive a score of four on the ITERS both at the onset of an intervention and at the follow up. While the classroom is rated as good, it did not actually experience any quality change while participating in the quality improvement project. Likewise a classroom that changes from a score of one to a score of three may still be rated as inadequate but has made significant and observable change. Following these two examples, this study also looked at quality change for *Baby Steps* classrooms by analyzing change scores and the factors associated with classrooms that experienced change versus those that did not. By addressing quality

change through a quality improvement project, this research adds to the literature by providing an in-depth look at the factors associated with quality change and how these compare to center directors' perspectives on increasing quality in their IT classrooms.

Conclusion

Vandell and Wolfe (2000) hypothesized that quality is the result of varied inputs encompassing regulations, parental income, consumer education, wages, training, and the physical care environment. They also suggest that a better understanding of the factors that lead to the most quality improvement is needed. While research has identified the factors contributing to quality, the outcomes of quality improvement efforts have been mixed. Some studies suggest that significant quality increase occurs with the assistance of quality improvement projects (i.e., Brown et al., 2008), while others suggest any improvements to quality are minimal (i.e., Miller & Bogatova, 2009). Few studies have examined how the factors that are associated with high or low quality work to effect quality change. To address this gap, the proposed study will examine if centers participating in *Baby Steps*, experienced quality change during the first year of participation and in subsequent years (research questions 1 and 3). This study will add to the conversation about what factors lead to the most quality improvement by assessing if baseline differences existed between centers that made gains in quality and those that did not (research questions 2 and 4).

Some research has also suggested that quality change may be impacted by a wider array of factors, such as business type, workplace environment, and even director

education, which has not traditionally been examined in relationship to quality change efforts. With the addition of program administrators' views on quality improvement efforts and the changes made within their own programs this research combines the qualitative interviews with the quantitative data and provides a more in depth picture of the factors associated with quality change.

This study, framed in an ecological perspective, provides further evidence of the importance of center and community characteristics that affect the quality of care infants and toddlers receive. Using a mixed method approach provides a more complete picture of how quality change efforts work in relation to structural and caregiver characteristics.

The research questions guiding the proposed research have been restated below.

Question 1. Did centers improve in quality during the first year on *Baby Steps*?

Question 2. If so, were there baseline differences that related to the improvement?

Question 3. Were there gains in subsequent years of participation on *Baby Steps*?

Question 4. If so, were there earlier differences that related to the later gains?

Question 5. What barriers and contributors do center administrators identify with quality change?

Question 6. Are these qualitative barriers and contributors reflected in the quantitative data?

CHAPTER III

METHODS

Sample

All child care centers in the state were given the opportunity to participate in *Baby Steps* through a noncompetitive Request for Grant Proposal process. One hundred and thirty-four state-regulated child care centers (46.2% of all centers in the state) participated in *Baby Steps* between 2003 and 2010. The 134 participating centers were contacted via surface mail, email, and phone to provide informed consent (Appendix C) to allow their *Baby Steps* information to be used for this research project. Non-responding centers were contacted by phone three times after the initial three emails were sent to secure their informed consent. Of the 134 centers, 48 (36%) gave informed consent.

Centers agreeing to participate in the research project included 29 operating for profit and 15 nonprofit centers, with four centers not reporting a business type. Center capacity ranged from a minimum of 18 children to a maximum of 200 with a mean of 88 ($SD = 46.7$) children. IT capacity (under 24 months) ranged from a minimum of 7 to a maximum of 40 infants and toddlers with a mean of 17 ($SD = 8.6$). Thirty-six centers were located in urban areas; 12 were rural/non-urban. Two centers were accredited by the National Association for the Education of Young Children (NAEYC). All centers were in compliance with state regulations monitoring basic health and safety standards. Prior to participation in *Baby Steps*, wages ranged from a minimum of \$5.15 per hour to a

maximum of \$10.25 per hour with a mean of \$7.36. Within the first year of participation center turnover ranged from zero to 100% with a mean of just over 62%.

Available public data indicated that the average number of years of participation for the 84 centers not giving informed consent was 2.8, while average years of participation for centers giving informed consent was 4. Average annual award amounts for centers not giving informed consent was \$7,315.41, while annual awards for centers giving consent averaged \$6,626.49. Three centers notified the researchers that due to corporate guidelines they were prevented from participating in any research, while the majority of centers simply did not return the informed consent form despite repeated follow up efforts.

The data for this dissertation covered seven years of the *Baby Steps* project (2003 to 2010). Centers could begin participation in *Baby Steps* anytime between 2003 and 2010 and could continue participation if they met annual grant requirements. Center administrators and IT teachers were required to meet routinely with an IT specialist (provided by DWS), attend training in IT care (offered through regional Child Care Resource and Referral offices), and allow the administration of the ITERS-R prior to participation and at annual intervals while participating. Of the centers that gave informed consent, 10 centers participated for the full 7. An additional four centers participated for 6 years, three for 5 years, and two for 4 years. The majority of centers participated for 3 years (18 centers) and eight participated for a minimum of 2 years.

Measures

Infant and Toddler Environmental Rating Scale Revised (ITERS-R)

The Department of Work Force Services contracted with early care and education programs (including CCR&Rs and Head Starts) and trained IT specialists to administer the Infant and Toddler Environmental Rating Scale Revised Edition (ITERS-R; Harms et al., 2003) as a measure of global quality within the IT programs. The ITERS-R, a rigorous, nationally recognized tool, is comprised of the following subscales: space and furnishings; personal care routines for infants and toddlers; listening and talking; age-appropriate activities; adult-child interaction; program structure including adult/child ratios; and parent and staff communication. Observers rated individual classrooms using a 7-point scale for 39 total items during a two to three hour observation period. Internal consistency has a Cronbach's alpha = .93 for the complete scale. The OCC's *Baby Steps* project manager was trained by the ITERS-R authors to be within one point of the correct score for each item. The project manager had 90% reliability with the authors. The project manager then trained the infant toddler specialists using the same standards and the training tools provided with the ITERS-R. Inter-rater reliability was established prior to assessment with observers completing 10 training observations to achieve a minimum of 85% reliability on the overall scale. Reliabilities were not broken out by subscale or item. Reliability checks were completed annually with the project manager and infant/toddler specialists to maintain a minimum of 85% overall reliability, meaning that they were within a one point of the correct total score.

***Baby Steps* Demographic Data**

Demographic data on centers was collected by the OCC and stored in paper files with the center's ITERS-R score sheets, original grant contracts, and other communications between the OCC and participating centers. Demographic data, reported by center directors or owners, included geographic location, parent fees, classroom capacity, and number of classrooms. Information was also available on individual teachers and included the following: positions, wages, career ladder level, completion of the ITE, and length of employment. Turnover was estimated using a formula dividing all new teachers in a given year by the number of total teachers for a classroom from the year prior. The variables used for the quantitative analysis portion of this study include: geographic location (coded as urban or non-urban), wages, turnover rates, the number of teachers that received the ITE, and parent fees. Classroom capacity and ratio were not included in this study as they are regulated by state licensing requirements and had minimal variation among programs. Other variables, such as teacher education, were not reported in sufficient numbers. Figure 3 highlights how the variables fit into the conceptual model.

Semi-Structured Interview

A semi-structured interview protocol was designed for center directors with questions focusing on defining quality in IT child care and the contributors or barriers to program efforts to achieve high quality. The interviews were conducted with program administrators. Teaching staff at the time of data collection was not the same as the staff that participated in *Baby Steps* from 2003 to 2010, though all participating administrative

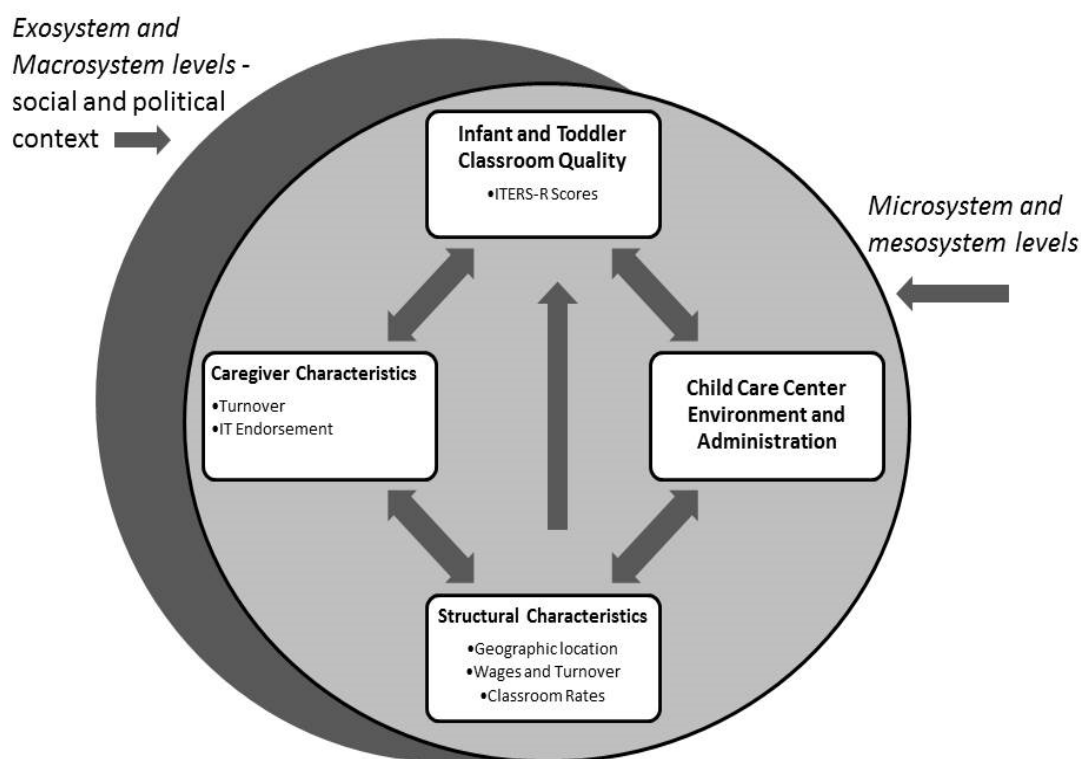


Figure 3. Ecological conception of child care quality and quality change with variables of interest for this study.

staff remained more constant. The seven-question interview protocol received IRB approval and was piloted with two program administrators. Questions include asking for a director's definition of quality and identifying barriers and contributors to their own center's quality. Table 2 highlights the coding scheme that was developed from the data for the pilot study. These codes were developed using a *concept-driven* approach, in which coding categories were informed by the literature (Gibbs, 2007). Codes were broken into two subcategories including barriers and contributors. The subcategories included process, structural, and caregiver characteristics. These codes were derived from the interview protocol, which questioned administrators specifically about the

Table 2

Structural, Process, and Caregiver Characteristics as Barriers and Contributors to Quality

Characteristics	Barriers	Contributors
Structural characteristics	Turnover; Low wages; Limited income;	Continuity of staff; Grant money
Process characteristics	Minimal support Not enough money to provide materials	Grant money allowed for the purchase of materials; Pleasant environment
Caregiver characteristics	Low wages; Infant/toddler care not seen as professional	Experienced staff; Incentives for training and experience; Teachers and administration feeling empowered and better prepared

barriers and contributors they perceived to achieving high quality. With additional interviews additional codes were developed and are discussed in Chapter IV.

Procedures

Baby Steps Data

Between 2003 and 2010 the OCC collected demographic data from center administrators as part of the *Baby Steps* grant renewal process and maintained the data in files at the OCC. ITERS-R assessments were completed by the trained infant/toddler specialists prior to a center's participation in *Baby Steps* and annually thereafter. While reliability checks were conducted frequently, the IT specialists conducting the ITERS-R assessments were also providing support and coaching to the programs. This leaves room

for potential bias and is discussed in the limitations of this study. ITERS-R scores were kept in the OCC files. To participate in the research, informed consent forms were mailed to 134 center directors participating in *Baby Steps* from 2003 to 2010. Centers agreeing to participate in the research were assigned an ID number. Data was collected by the researcher and an undergraduate assistant from the OCC files during several trips to the state child care office in Salt Lake City. Demographic information and ITERS-R scores were recorded on electronic data collection forms (Appendix B), securely saved, and then entered into SPSS without identifying information. The data that were collected its source are highlighted in Figure 4.

Semi-Structured Interviews

To complete the interviews, the 48 programs that gave initial informed consent were contacted via email and phone to request each program administrator's participation.

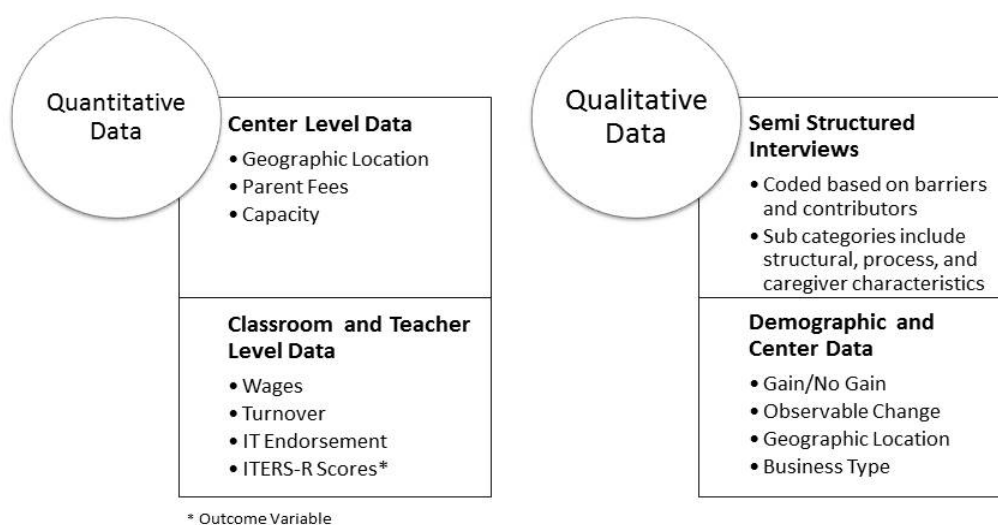


Figure 4. Graphical representation of collected data.

After multiple follow up calls and emails the sample for the qualitative interviews consisted of seven center directors who provided informed consent. The two directors from the pilot study were included in this sample. All data from the pilot was recoded with the five additional interviews. An independent reviewer reviewed the transcripts and codes to assess for bias. Participating directors were spread across the state with four in urban locations and three in non-urban locations. Responses were analyzed in light of the quantitative results and in terms of those centers that made gains in ITERS-R scores and those that did not. A 10-question demographic survey was emailed out to the seven participants with instructions for returning it. One participating director requested a hard copy of the questionnaire. It was delivered to her in person during the interview. Questions on the survey include the following: years in the field, educational level, annual wages/salary, number of teachers supervised, and administrator's birth date.

Interviews were approximately 20 to 30 minutes. Four interviews were conducted in-person and three were conducted over the phone. All interviews were recorded with permission, using the iPhone voice recorder. Recordings were saved in a digital MP3 format and stored on a secure hard drive and transcribed. Responses were compiled and analyzed for common themes with individual and identifying information being removed prior to analysis. The interview protocol and demographic survey appear in Appendix A.

Analyses

This study employs a sequential explanatory mixed method design (Hanson, Creswell, Clark, Petska, & Creswell, 2005). Research questions 1, 2, 3, and 4 were

answered using quantitative data collected from the original DWS files. Questions 5 and 6 were answered using qualitative methods.

Quantitative Analysis

Analyses for question 1 (Did centers improve in quality during the first year on *Baby Steps*?) and question 2 (Were there baseline differences that related to the improvement?) began with examining the mean ITERS-R subscale scores and average scores for *Baby Steps* classrooms at each data collection point. Correlations were calculated between scores and the independent variables of wages, turnover, rates, capacity, and geographic location. Due to the highly correlated nature of the subscales further analysis of the subscales was not included. Paired sample *t* tests were used to assess if ITERS- R scores changed significantly from baseline to T1.

To assess differences between groups the researcher followed the example of Whitebook and others (2004), and Campbell and Millbourne (2005). Raw difference scores were calculated for each classroom's average ITERS-R score from baseline (T0) to Treatment Time 1 (T1), T1 to Treatment Time 2 (T2), T2 to Treatment Time 3 (T3), T3 to Treatment Time 4 (T4), T4 to Treatment Time 5 (T5), T5 to Treatment Time 6 (T6). Classrooms were divided into those that made gains (Gain Classrooms) at each treatment interval and those that maintained their scores or had decreasing scores (No Gain Classrooms). To identify differences between the two groups, a one-way ANOVA was run using Gain and No Gain classrooms as the grouping variable and turnover, capacity, rates, wages, and geographic location each as an independent variable.

Observable change scores were also calculated. Using the framework provided by Campbell and Millbourne (2005) classrooms were recoded at each time point into one of three categories: increased, maintained, or decreased. Increased and decreased change was assigned to classrooms that increased or decreased by one standard deviation from the mean in their ITERS-R scores. Maintained classrooms remained within one standard deviation, though they obviously had some minor changes to ITERS-R scores. The observable change categories were compared with the gain/no gain scores to assess if observable change and actual change differed.

To answer questions 3 and 4, a mixed model analysis was used to further explore the relationship of independent variables with ITERS-R scores over time (Seltman, 2012; Shek & Ma, 2011). The mixed model analysis had three benefits for answering the research questions. First, the mixed model approach accounted for the possible violation of independent observations inherent in the repeated use of the ITERS-R within and between centers and across years. Secondly, a mixed model was able to handle the unequal sample sizes and missing data as centers stopped participating in *Baby Steps* at different time points. Lastly, the mixed model was able to assess for variance among the group mean and individual variance for the classrooms nested within centers.

Due to the small sample size and highly correlated nature of variables, one model was developed for each variable of interest to examine how that variable impacted ITERS-R scores. The first model addressed only the role of time on ITERS-R scores. Additional models included other variables of interest based on their correlations with the ITERS-R scores and prior research.

Qualitative Analysis

To answer question 5 (What barriers and contributors do center administrators identify with quality change?), each interview was transcribed verbatim. Transcripts were read repeatedly to identify categories and themes to code.

Data was analyzed using a *general inductive approach* (Thomas, 2006).

Following the five principles for a *general inductive approach*, data analysis was guided by the research questions with focus being on the identified barriers and contributors to quality and how those differ between centers based on the variables of interest from the quantitative data. Data was coded during repeated readings into categories and subcategories. A coding scheme characterized by a conceptually clusters matrix was developed (Miles & Huberman, 1994).

Data was stored in Microsoft Word and managed using a numbered line system. Coding schemes were maintained in a Microsoft Excel database. Data, coding, and the researcher's interpretations were reviewed by an independent reviewer to ensure that the researcher's bias and experience did not interfere with the analysis. The independent reviewer and the researcher coded the first, third, and seventh interviews separately and then discussed the coding to come to a consensus.

To answer question 6 (Are the qualitative barriers and contributors reflected in the quantitative data?), the researcher synthesized the qualitative and quantitative data by looking for assimilation (Voils, Sandelowski, Barroso, & Hasselblad, 2008), or a convergence of similar ideas, between both the qualitative results and the quantitative results. This comparison of data, bolstered by quotes from program administrators,

provided a more complete picture of how IT programs achieve quality change. The comparison also revealed how centers experience the barriers and contributors to achieving quality and important differences between programs.

The Role of the Researcher

Katz's four perspectives on quality have been employed to address the potential bias the researcher may bring to the interpretation of results for this study. As discussed in Chapter II, use of Katz's four perspectives may enhance the study of child care quality by providing diverse perspectives, meaning, and experiences to the term. The four perspectives also offered researchers a way to examine their own roles, experiences, and biases with child care quality research.

Inside-Out Perspective

The inside-out perspective relies on insider knowledge of child care derived from working as a teacher, caregiver, and/or administrator in a child care program. The researcher has intimate knowledge of child care and specifically IT center-based programs from an inside-out perspective. The researcher has spent time working as a teacher in an IT program and currently operates a child care center with an IT classroom. This position has allowed the researcher to experience the programmatic challenges many of the directors discuss in their interviews, including the importance of teacher continuity and the financial challenges associated with child care and IT classrooms.

Outside-In Perspective

The outside-in perspective of quality is based on the parent's experiences with child care for their child. The researcher also maintained this perspective as the parent of a child who began child care at three weeks of age. The outside-in perspective has given the researcher an understanding of the different definitions of quality. It also reflects the researcher's values and beliefs that child care is not inherently bad for young children and, in fact, can often be a support to children and families.

Top-Down Perspective

This is typically the role that child care researchers take in terms of understanding child care quality issues. It stems from an outside perspective that relies on evidence to understand quality. Having experienced data collection, and close examination of the ITERS-R and other rating tools, the researcher's top-down perspective potentially narrows the researcher's definition of quality as it conforms to a more quantitative view of quality. It also presents a challenge as the researcher attempts to remain free from bias while interpreting the results, but must recognize that she is more enmeshed in the "world of child care" than most researchers are.

Bottom-Up Perspective

This perspective encompasses the views and experiences of the child and is perhaps one of the most difficult for researchers to grasp. For this researcher, child care was a normative experience and part of childhood. While this perspective remains

limited to childhood recollections, it has added to the value and belief that child care is not a negative factor for children to experience in their early years.

In summary, the researcher has a relationship with child care that potentially could bias the interpretations of the results of this study. The researcher is intimately aware of the hard work involved in providing high quality child care and often describes the child care profession as being viewed as “the help.” Conversely, this same relationship may also aid the researcher in providing a more complete picture of child care quality and quality change as her own understanding incorporates multiple perspectives, as Katz recommended. These differing perspectives aid the researcher to understand that programs may experience quality change in different ways and to look for the connections and disparities among programs.

CHAPTER IV

RESULTS

Quantitative Analysis

The following sections review the statistical analysis and results used to answer each of the quantitative research questions. Analyses include descriptive statistics (means, standard deviations, ranges, and frequencies of key variables), inferential statistics to compare variables between groups, and a mixed model analysis to compare differences across time.

Descriptive Statistics

Participation Rates

Participation dropped drastically across the seven years of the study period with 86 classrooms within 48 centers participating at the baseline assessment and receiving at least one post-treatment assessment. The second post-treatment assessment was completed with 71 classrooms. By the third post-treatment assessment over 60% ($n = 52$) of the original sample had dropped from participation, meaning that the center and/or classrooms did not participate in *Baby Steps* for more than three years. In year seven of *Baby Steps*, only five classrooms remained participating and just over 94% ($n = 81$) of the original 86 classrooms had dropped.

Classroom Group Size and Number of Teachers

There was minimal variation in classroom group sizes with the majority of classrooms having eight or fewer children in each infant and/or toddler classroom while participating in *Baby Steps*. At baseline, five classrooms reported having eight children, while 15 reported having four children. Only four classrooms reported more than eight children with one reporting 16 children. The minimal variation in classroom group sizes is most likely due to state licensing regulations that dictate the maximum group size for children under the age of two is eight or fewer. Centers built prior to 2004 were grandfathered into regulations that had a larger maximum group size for children under the age of two. There was also little variation in the reported number of teachers in each classroom across time. At baseline the majority of classrooms had two teachers ($n = 43$, one teacher $n = 13$, three teachers $n = 13$). Similar to group size the teacher/child ratio for IT classrooms is regulated by state licensing at 1:4. Due to the minimal variation in number of children and number of teachers in the classrooms no further analysis was run on these two variables, despite previous research linking both with IT child care quality.

ITE

One component of the *Baby Steps* program was the mandate that administration and teaching staff complete forty hours of IT training and obtain their ITE. The trainings were conducted by the regional Child Care Resource and Referrals, and *Baby Steps* money could be used by individual centers to pay staff for attending the training, to pay training fees, or to provide a stipend for completing the trainings. Table 3 describes the

percentage of classrooms that reported at least one teacher working on their ITE and the percentage of classrooms reporting at least one teacher with a completed ITE. It is important to note that the sample sizes of classrooms declines dramatically after T3.

Wages, Turnover, and Parent Fees

Three variables of interest to this research included average wages of teachers, turnover rates of teachers, and the rates for care. Table 4 summarizes the means for each of these variables over the seven year study period. A turnover rate (percent) for each classroom was calculated by taking the total number of teachers who had left from one year to the next and dividing it by the total number of teachers within the same time period.

ITERS-R Scores

Descriptive statistics for the classroom ITERS-R scores and subscales are described in Table 5. From baseline to T6 mean ITERS-R scores range from a low of 3.6 (at T5) to a high of 4.2 (at T2). From baseline to T1 the mean score was unchanged.

Table 3

Infant and Toddler Endorsement (ITE) by Classroom

	T0	T1	T2	T3	T4	T5
	<i>N</i> (77)	<i>N</i> (80)	<i>N</i> (63)	<i>N</i> (33)	<i>N</i> (23)	<i>N</i> (14)
Classrooms with > 0 teachers working on endorsement	22%	35%	35%	15%	33%	35%
Classrooms with > 0 teachers completed endorsement	25%	51%	63%	66%	56%	57%

Table 4

Means and Standard Deviations for Wages, Turnover, and Parent Fees Over Time

Variable	T0		T1		T2		T3		T4		T5		T6	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Hourly wage	\$7.60	\$1.46	\$7.75	\$1.33	\$8.37	\$1.78	\$7.80	\$2.08	\$7.87	\$1.30	\$7.79	\$1.19	\$7.97	\$0.47
# class-rooms	N(74)		N(70)		N(41)		N(33)		N(23)		N(13)		N(3)	
Turnover			50%	71%	56%	37%	60%	41%	62%	40%	46%	43%	70%	45%
# class-rooms			n(83)		n(63)		n(32)		n(24)		n(14)		n(5)	
Rates	\$557.00	\$127.55	\$590.08	\$122.36	\$588.71	\$84.81	\$593.00	\$124.70	\$597.20	\$82.41	\$658.14	\$85.28	652.00	\$57.18
# class-rooms	N(77)		N(60)		N(32)		N(21)		N(17)		N(14)		N(5)	

Table 5

ITERS-R Subscale Means and Standard Deviations

Variable	T0		T1		T2		T3		T4		T5		T6	
	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>
Space and Furnishings	3.6	1.2	4.0	0.9	4.2	0.9	3.9	1.1	3.9	1.0	3.8	1.0	4.5	0.6
Personal care routines	3.8	1.6	3.4	1.2	4.1	1.3	3.4	1.3	3.1	0.8	2.8	0.7	3.4	0.6
Listening and talking	3.9	1.4	4.1	1.3	4.7	1.1	4.4	1.4	4.5	1.0	3.9	1.2	4.8	1.1
Activities	3.4	1.1	3.6	1.1	4.1	8.4	3.7	1.1	3.8	0.8	3.7	0.9	4.1	0.6
Interaction	4.7	1.6	4.3	1.2	4.9	1.3	4.4	1.3	4.2	1.1	3.4	0.9	4.2	1.1
Program structure	3.8	1.7	3.5	1.5	3.9	1.4	3.4	1.3	3.3	1.4	3.1	1.0	3.5	1.1
Parents and staff	4.3	1.2	4.1	1.0	4.2	0.9	4.2	0.8	4.3	0.8	4.2	0.8	4.2	0.9
Total ITERS score	3.8	1.2	3.8	0.9	4.2	0.8	3.8	0.9	3.9	0.1	3.6	0.6	4.1	0.2

A paired sample t test revealed a significant increase in ITERS-R scores between T1 and T2 ($t = -3.146$, $df = 60$, $p = .003$) and a significant decrease in mean scores between T3 and T4 ($t = 2.8$, $df = 30$, $p = .009$). Statistically significant change among ITERS-R scores can occur with very little actual point change. The change in score from T1 to T2 also represents an observable change in that the mean of the centers moved from the “minimal” range of quality to the “good” range.

Correlations

Correlations were calculated at each time point from baseline (T0) through T4 to identify existing relationships between ITERS-R scores and the independent variables of wages, turnover, rates, and number of teachers with a completed ITE. Due to the highly correlated nature of the ITERS-R subscales with the total average ITERS-R score (r ranging from .82 to .91, $p < .001$), correlations are only reported for the total average score. Correlations are reported in Tables 6 through 10.

A relationship between ITERS-R average scores, turnover, and the number of teachers with a completed ITE is significant in the T1 data (the first set of data with turnover rates). The relationship between turnover and the number of teachers with an ITE continues to be significant through T4. At T3 and T4 wages and number of teachers with ITE are also significantly linked. These relationships will be further explored in the mixed model analysis to answer the 3rd and 4th research questions.

Table 6

Correlations Between Variables at Baseline

Variable	Average ITERS-R scores	Wages	# of teachers with endorsement	Rate for classroom
Average ITERS-R score		.15	.16	.11
Wages			.16	.50**
#of teachers with endorsement				.16
Rate for classroom				

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 7

Correlations Between Variables at Treatment Time 1 (T1)

Variable	Average ITERS-R scores	Wages	# of teachers with endorsement	Rate for classroom	Turnover	Gain/no gain
Average ITERS-R score		-.00	.25*	-.15	-.23*	.23*
Wages			.04	.61**	.05	-.22
#of teachers with endorsement				.06	-.40**	-.09
Rate for classroom					.15	-.35**
Turnover						-.10
Gain/no gain						

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 8

Correlations Between Variables at Treatment Time 2 (T2)

Variable	Average ITERS-R scores	Wages	# of teachers with endorsement	Rate for classroom	Turnover	Gain/no gain
Average ITERS-R score		.16	.21	.04	-.13	.31*
Wages			.03	.23	-.10	.16
#of teachers with endorsement				-.28	-.37**	.09
Rate for classroom					.08	.04
Turnover						-.02
Gain/no gain						

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 9

Correlations Between Variables at Treatment Time 3 (T3)

Variable	Average ITERS-R scores	Wages	# of teachers with endorsement	Rate for classroom	Turnover	Gain/no gain
Average ITERS-R score		.10	.25	.19	-.38*	.65**
Wages			.45**	.11	-.10	-.01
#of teachers with endorsement				-.14	-.52**	-.02
Rate for classroom					.19	.20
Turnover						-.04
Gain/no gain						

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 10

Correlations Between Variables at Treatment Time 4 (T4)

Variable	Average ITERS-R scores	Wages	# of teachers with endorsement	Rate for classroom	Turnover	Gain/no gain
Average ITERS-R score		.51*	.04	-.02	-.18	.38
Wages			.54*	.19	-.34	.08
#of teachers with endorsement				-.05	-.49*	-.19
Rate for classroom					-.02	-.14
Turnover						.08
Gain/no gain						

* $p < .05$, ** $p < .01$, *** $p < .001$.

Research Question 1: Did Centers Improve in Quality During the**First Year on *Baby Steps*?**

To answer question 1 paired sample t tests ($N = 78$) were conducted to evaluate if the mean classroom ITERS-R scores differed significantly from baseline (T0) to T1.

Overall, there was no significant difference in the total average scores from T0 to T1 ($t = -.13$, $df = 77$, $p = .89$). Paired t tests for the ITERS-R subscales revealed that there were

significant differences in classrooms scores from T0 to T1 in the space and furnishings subscale ($t = -2.95$, $df = 77$, $p = .004$), activities subscale ($t = -2.45$, $df = 77$, $p = .017$), and the interaction subscale ($t = 2.02$, $df = 77$, $p = .047$). Differences in the space and furnishing subscale and the activities subscale may be explained by the infusion of money that the *Baby Steps* project provided to centers to purchase needed furniture and materials to enhance the environment for each classroom.

Research Question 2: Were There Baseline Differences That Related to the Improvement?

Raw difference scores for the average ITERS-R scores were calculated from baseline (T0) to T1 and classrooms were recoded as gain or no gain classrooms. Forty-five classrooms experienced gains in their average ITERS-R score from baseline to T1 and 36 centers experienced no gains. An independent sample t test with Gain/No Gain as the grouping variable was used to calculate if significant differences existed on independent variables at baseline between the Gain and No Gain classrooms. Results indicated that the only significant baseline difference between Gain and No Gain classrooms was in baseline ITERS-R scores ($t = 5.92$, $df = 77$, $p < .001$). A correlation between gain/no gain classrooms and their baseline ITERS-R scores indicates that centers with a lower ITERS-R average score at baseline were more likely to see gains by T1. These results would suggest that classrooms with the most room for improvement experienced more improvement, while classrooms that scored higher initially on the ITERS-R were likely to remain stagnant or even decline in quality within the first year of

participation. The number of teachers with the endorsement and parent fees both neared significance. Wages, turnover, and geographic location were insignificant in terms of differences at baseline between Gain and No Gain centers.

Raw difference scores may overinflate the baseline differences between Gain and No Gain centers as relatively small gains placed a center into the gain category. Following Whitebook and colleagues (2004) model, observable change was calculated using the standard deviation in raw scores ($SD = 1.1$ at T1). At T1 classrooms seeing more than a 1.1 increase in scores were recoded as increased, those seeing a decrease of 1.1 or more as declined, and those in between as maintaining. Following this method 14 classrooms experienced observable decline in their average ITERS-R score in the first year of participation. Fifty-five classrooms maintained their scores and 12 classrooms had an observable increase of more than 1.1 SD in their scores. Table 11 displays the samples for both Gain and No Gain classrooms based on raw difference scores and based on observable change across time. Standard deviation was adjusted for each year of participation. Examining observable change instead of just raw difference scores highlights that most classrooms were able to maintain their quality level. However, the observable change categories reflect that few classrooms made highly significant changes that increased their scores by 1.1 points by T1.

One-way ANOVAs were used to test baseline differences between the three observable change groups at T1. The dependent variables tested were urban/nonurban, number of teachers with completed ITE, wages, and baseline ITERS-R mean score.

Table 11

Samples Sizes for Each Change Category Across Treatment Times

Treatment time	Raw difference score		Declined	Observable change	
	Gain	No gain		Maintained	Increased
Treatment time 1	45	36	14	55	12
Treatment time 2	38	24	7	37	18
Treatment time 3	9	22	15	13	3
Treatment time 4	11	12	5	11	7
Treatment time 5	6	7	4	6	3
Treatment time 6	4	1	0	2	3

Differences in turnover were also tested; however, turnover was calculated for the time between baseline and T1. The results indicate that there was a significant difference at baseline in the mean ITERS-R scores ($F(2,77) = 21.21, p < .001$). Bonferroni *post hoc* tests indicated that baseline ITERS-R scores were significantly different for all three groups with classrooms in the “increased” group having significantly lower scores at baseline than the maintained or declined group. A one-way ANOVA also revealed that groups significantly differed on their urban/nonurban status ($F(2,78) = 4.35, p = .016$). Bonferroni *post hoc* tests indicated significant differences existed between the maintained group and the increased group of classrooms but not for those classrooms that declined.

Research Questions 3 and 4: Were There Gains in Subsequent Years of Participation on *Baby Steps*? If So, Were There Earlier Differences That Related To the Later Gains?

A mixed model analysis was used to examine classroom quality change over time. The mixed model method was chosen because it could handle the nested nature of

classrooms within centers, the highly correlated ITERS-R data, the high attrition rates, and the missing data. Just as the ITERS-R reports for the instrument, Cronbach's alpha revealed that this sample's ITERS-R subscale scores had high internal consistency across time. To answer questions 3 and 4 total ITERS-R average score was used as the dependent variable and analysis did not include subscale scores. The mixed model form of $Y_{1 \text{ to } n} = X_{1 \text{ to } n}\beta + \varepsilon$, where Y is the vector of the ITERS-R scores, X represents the fixed effects for variable one to the n th variable, β is the vector of the fixed effect parameters, and ε is the vector of residual errors was applied (SPSS Technical Report, 2002). All variables were considered to have fixed effects.

To answer research question three (Were there gains in subsequent years of participation in *Baby Steps*), Model 1 was comprised of ITERS-R scores and treatment time to assess if classroom average ITERS-R scores increased over subsequent years of participation (up to six years after baseline). Model 1 indicates that there were no significant differences in ITERS-R scores across treatment times (β ranged from .27 to -.40 at T5, p ranging from .45 to .33). In fact, ITERS-R scores appeared to decrease slightly, though not significantly, for those centers who participated in *Baby Steps* the longest ($\beta = -.40$, $SE = .40$, $p = .33$). However, this is contrary to the results of the paired sample t test reported above that did find a significant increase in average ITERS-R scores from T1 to T2. Unlike the paired sample t test, which excluded cases with missing values, the mixed model allows cases with missing values and is more sensitive to mean changes, which may explain the difference in results. To examine if the results of the paired sample t test could be replicated using the mixed model analysis, Model 2 was

created by reverse coding treatment time and only included baseline, T1, T2, T3, and T4 due to the drastic sample size decrease at T5. Results of Model 2 did find significant increases in ITERS-R scores at T2 compared to T1 or baseline ($\beta = .35$, $SE = .13$, $p = .007$). Beyond T2 changes in the ITERS-R, scores were still not significant.

To answer research question 4, mixed model analyses were run with the independent variables each being placed in their own model. Model 3 used ITERS-R scores as the dependent variable and number of teachers who had completed the ITE as the differing variable, with time as the repeated measure. The continuous variable of number of teachers with ITE was recoded into two levels, classrooms with zero teachers completed and those with one or more teachers completed (three teachers being the most any one classroom had). The results of the mixed model indicate that classrooms with zero teachers having completed the ITE had on average a .33 decrease in their ITERS-R score ($\beta = -.33$, $SE = .12$, $p = .007$).

Model 4 examined how turnover impacted ITERS-R scores over time. The continuous variable of turnover was also recoded into four levels (0 to 25% $n = 53$; 26 to 50% $n = 58$; 51 to 75% $n = 17$; and 76% or higher $n = 95$ (N 's are based on all classrooms over time) based on quartiles. Classrooms with the lowest levels of teacher turnover (between zero and 25%) have significantly higher scores than those with the highest level of turnover ($\beta = .40$, $SE = .15$, $p = .008$). Turnover was reexamined at two levels by splitting the sample into those classrooms who had between zero and 50% turnover ($N = 111$ classrooms from Baseline to T6) and those that had 51% or more turnover ($N = 112$ classrooms from Baseline to T6). Results were similar to the quartile

breakdown of turnover with classrooms experiencing 50% or less turnover more likely to have significantly higher scores on their ITERS-R average over time than those with greater turnover ($\beta = .34$, $SE = .12$, $p = .005$).

Model 5 examined the impacts of each classroom's geographic location (urban or non-urban) with insignificant results. Likewise, classroom rates (Model 6) was insignificant. Wages (Model 7) was recoded into quartiles (\$6.83 and less $n = 65$; \$6.84 - \$7.56 $n = 65$; \$7.57-\$8.73 $n = 63$; \$8.74 and high $n = 64$; with a maximum of \$15.00 $n = 1$). Wages also had an insignificant impact on classroom ITERS-R scores over time.

Qualitative Analysis

Research Question 5: What Barriers and Contributors to Quality Change Do Center Administrators Identify?

To answer the fifth research question seven interviews from center directors across the state were collected and transcribed for analysis. All quotes below are provided verbatim. In areas where it may difficult for the reader to decipher meaning the researcher has added context using [].

Six of the seven directors returned the demographic survey. Of those six, the directors interviewed were all highly experienced females with a mean of 31 years in the field and a mean of 14 years as a director (minimum = 8 years, maximum = 30 years). Mean age for the directors was 48 (range 36 to 64). Five of the directors reported having at least a bachelor's degree with one reporting a graduate degree, though not in early childhood education. When asked about specialized early childhood

degrees/certifications three reported that their bachelor's degree was in early childhood education. Three other directors reported having their National Administrator Credential (a 45 hour director specific training course). The majority of directors reported making between \$40,000 and \$59,000 per year. One director reported making less than \$20,000. Center size varied some among directors with the number of teachers a director reported supervising ranging from 13 to 27 (mean = 22) and the number of IT teachers ranging from 4 to 10 (mean = 7). Additional demographics and center information by director is reported in Tables 12 and 13.

Following a general inductive approach (Thomas, 2006), initial coding was guided by the research question and identified the barriers and contributors that program administrators perceived with creating quality change. Sub-categories were developed based on the conceptual model presented in Figure 2 and included structural characteristics, caregiver characteristics, child care center/workplace environment, and the process quality of the IT classroom. based on the conceptual model presented in

Table 12

Director and Center Demographics

Director	Years in field	Years as director	Years center participated in <i>Baby Steps</i>	Center capacity	Business type	# of IT classrooms	Urban/non-urban
1	20	12	4	74	nonprofit	1	non-urban
2	31	30	3		for profit	2	non-urban
3	19	14	7	101	nonprofit	2	urban
4	14	9	5	32	nonprofit	1	urban
5	22	13	7		nonprofit	5	urban
6	20	8	3	63	for profit	2	urban
7			7	34	for profit	1	non-urban

Table 13

Results of Baby Steps by Center Director at One Year After Baseline (T1)

Director	Mean ITERS-R scores	Gain/no gain	Observable change	# teachers with ITE
1	4.5	gain	maintained	2
2	4.5	gain	maintained	1
3	5.6	gain	maintained	2
4	3.5	gain	maintained	1
5	4.1	gain	maintained	1
6	4.3	gain	increased	0
7	3.1	no gain	decreased	0

Figure 2 and included structural characteristics, caregiver characteristics, child care center/workplace environment, and the process quality of the IT classroom.

Table 14 presents the findings summarized into a *conceptually clustered matrix* (Miles & Huberman, 1994) of the a priori categories of barriers and contributors and the sub-categories of structural characteristics, caregiver characteristics, child care center environment, and process quality in the IT classroom derived from the conceptual model (Figure 2).

Many of the items identified by the directors could be seen as both barriers and contributors to enhancing quality. For example, program administrators cited money as both a barrier and contributor with limited funding being a major barrier to enhancing quality and the infusion of grant funding from the *Baby Steps* program being a contributor to increased quality. Following Thomas's (2006) procedures for inductive coding, these items were coded into multiple categories. The two-sided nature of the

Table 14

Conceptually Clustered Matrix of Identified Barriers and Contributors

Variable	Barriers	Contributors
Structural characteristics	Poor consumer awareness/education about quality child care; Minimal outside support (i.e., money); Paperwork and reporting requirements	Low child to adult ratios; Outside funding sources such as grants
Caregiver characteristics	Low wages and no benefits lead to high turnover; Work is hard and not for everyone; Caregiver/teacher burnout	Infant/toddler endorsement trainings; Caring, loving, patient, and nurturing caregiver/teacher personalities; Experienced caregivers/teachers; Team players
Child care center / workplace environment	Minimal motivation for ongoing training or education; Poor staff retention due to low wages and lack of benefits	Continuity of caregivers/teachers; Feelings of appreciation, professionalism, and value; Collaboration and teamwork among staff; Support from administration and other caregivers/teachers; Attitudes of enjoyment and willingness to change
IT classroom quality (process)	Not enough money to provide enough toys and materials	Plenty of toys and materials for all children and to rotate them; Caring, loving, patient, and nurturing caregiver/teacher personalities; Health and safety standards; Training and the ITERS-R set expectations for environment and interactions; “Well oiled machine” in terms of caregiver/teacher teamwork

identified barriers and contributors may reflect the highly inter-related relationships between variables.

Barriers

Money. Regardless of center size, business type, or geographic location, the seven directors were united in their identification of money (or a lack thereof) as the primary barrier to increasing quality. When asked to identify barriers to achieving quality four of the seven directors stated “money” as their very first response. Director 1 summed up the relationship between quality and money by saying, “If you are not making much money then you definitely don’t want to spend more money on improving your program.”

However, as the directors further explained how they perceived barriers to quality, “money” took on several different roles. Six of the center directors discussed money as barrier in terms of low wages and a lack of benefits for staff and teachers, thus leading to high turnover or poor staff continuity. Director 4 described the relationship between money, wages, and quality by saying,

I think people need to be paid a living wage. I wish my infant-toddler teachers got paid more. They do get paid the same as preschool teachers, but for hourly people I just don’t think it is right that they get paid so little. And I think that affects how long they stay at a place. And I think how long they stay at a place affects continuity of care and the quality of care that children get.

Director 3 added, “. . . retaining teachers is money and its benefits. Not all benefits are money but a lot of them are.”

Director 6 stated the relationship this way:

Low wages are what I would say are at the top. Low wages are top number one barrier that you have because if you can't pay your staff members what they need to make, then obviously you're going to lose them. And so I think that's your top one in continuity . . . and insurance. No benefits.

While wages and turnover could be considered caregiver characteristics, they could also be placed into the process quality category. The directors above all highlight that low pay leads to less staff continuity as teachers leave for higher paying jobs or jobs with benefits. Poor staff continuity interrupts the children's day-to-day experience with the classroom environment and their relationships with the teachers.

It would appear that directors that feel aspects of the center/workplace environment lead to preventing turnover. When asked about barriers, Director 7, who runs the smallest center in a non-urban area said, “Staff-wise, not really. I am really fortunate I have my daughters that work for me, so it's kind of a family affair.”

Director 2, also from a non-urban center described the role of the center atmosphere in preventing turnover saying, “We don't pay our teachers a lot [but] we don't have high turnover. It's just the school atmosphere itself promotes quality.” The assistant director for this center also added, “I would say that one of the reasons that we all enjoy our jobs and stay here is because . . . we enjoy the atmosphere.”

While Director 2 and Director 7 reported that turnover was not an issue both directors also reported in their *Baby Steps* data that they experienced turnover each year they participated. Both directors oversee non-urban, private, for-profit centers. This discrepancy between the *Baby Steps* data on turnover and the interviews indicate that these directors perceive the barrier of money differently from directors of non-profit entities. Director 2 and Director 7 both suggested that money was more important in being able to provide the type of environments and toys that were necessary for quality, rather than being related to staffing issues.

Hard work. Three directors identified the level of work it takes to provide quality as a major barrier calling quality IT care “hard work.” Director 3 said, “Quality takes work. And it takes a commitment to do that work. . . People don’t want to do it because it is work.” Directors 1 and 2 further explain how “hard work” impacts quality. These directors’ descriptions of “hard work” focused on individual personality characteristics placing the barrier of “hard work” into the category of caregiver characteristics.

Director 1 highlighted the role of an individual’s personality in offsetting the physical, mental, and emotional demands of IT care by saying,

There are not a whole lot of people who want to change diapers for ten hours a day, forty hours a week. And work with one-year-olds that don’t talk, and you’re feeding and diapering the whole entire time. So I think it takes a special person who wants to do that too. And I don’t see a ton of them, because I mean, I’ve finally gotten some and I just have to pray that I hold onto them and I don’t ever let them out the door.

Director 4 described the level of work and its role with quality, saying:

It is hard work to be in a room with infants and toddlers all day. And I understand that people, unfortunately, don't want to make a career of that. . . It's very physical, it's up and down, and it's listening to crying babies . . . it is intense, it is intimate. You're in a small room all day; it's not a big room. You're working with the same people, and the same kids, and the same parents. And sometimes the parents can be challenging . . . I think just the repetitiveness of it. Some people just aren't cut out to sit on the floor and read books and play with kids all day. Some people enjoy that and some people get terribly bored by it . . .

You're lifting, you're comforting, you're frustrated because they are crying and you have done everything that you can think of, and they are pre-verbal and can't tell you what is wrong. It's just the normal things that are frustrating about dealing with small children. Only you have it amplified because you have eight children, and three adults that can't figure it out. And I just think that's what makes it hard . . . and the fact that you are not getting paid very much! If you were getting \$20 dollars an hour for this hard work, you might feel differently about it. You might feel more valued.

The three directors who identified "hard work" as a barrier to quality operate centers that are non-profits. They each receive a level of subsidy from an umbrella agency (e.g., church, university, or employer-sponsored), tend to have higher wages

and/or some benefits, and also place more value on education level when compared to the private for-profit centers. This would suggest that non-profit programs may perceive the role of the teacher/caregiver differently than their for-profit counterparts because they are not as worried about paying rent or maintaining the environment as a result of the subsidies they receive.

Consumer awareness. Director 5 and Director 7 identified a lack of consumer awareness about what to look for in quality child care as a major barrier to providing quality child care for infants and toddlers. Director 5 described the role of consumer awareness, saying:

I think there is a stigmatism (sic) with child care. Especially to me the “dirty words” of day care. I don’t like that, I have people call and ask if we babysit and the teachers laugh at me because they have heard me on the phone say, “You know we would love to care for your child but we don’t babysit. This is child care, not day care, and we will take care of your child if that’s what you want. . .” But I think that is a big stigmatism (sic). I think that is a problem with quality. That even though you have a great center you still hear, “Oh, it’s a day care.” . . . It’s just people not understanding what a quality center is. What they should ask for; what they should expect.

Director 7 described similar feelings when sharing her views on barriers to quality:

I think a lot of times that people call us about what our price is and they don't even come and look. They just go "Okay," and then they go to somewhere that has a lower price. And you know, because we are licensed and everything, we charge a little bit more. Because I think we have the quality . . . I had a parent with a five-month-old come in yesterday and she was totally impressed. She said, "Oh, I had no idea that it was this nice. That you have everything child-sized and all for the infants." She said, "I had no clue." But I think a lot of people if they don't bother stopping by they just think, "Oh I can't afford that." And they go somewhere that isn't licensed but doesn't charge as much.

Though Director 5 and Director 7 identified similar barriers to quality with consumers not knowing what to look for in quality child care, it is interesting to note that the centers they run are very different from one another. While Director 5 oversees a large, urban, non-profit center, Director 7 oversees a small, non-urban, for-profit center. This suggests that consumer awareness about quality may be a universal barrier regardless of business type or geographic location. A lack of consumer awareness or education is placed into the subcategory of structural characteristics as its role in preventing quality change is very distal from the day-to-day experiences of the child and relies on public policy and social context to change or impact.

Contributors

Administrators' perceptions of contributors to quality were more varied than their perceptions of barriers. The seven directors identified several different items as

contributors to quality in each of the four sub categories.

Personality, experience, education. While the barriers that fell into the subcategory of caregiver characteristics were dominated by themes of turnover and the lack of staff continuity, caregiver characteristics identified as contributors to quality were most often identified as attributes of teacher personality. Words such as passionate, loving, caring, nurturing, and team player were used by all seven directors to describe quality and the contributions teachers make to it. Director 4 stated, “You just need to have a love for children and a passion for children.” Director 6 stated, “The number one important thing for quality is the collaboration with the staff members.”

Director 3 said:

I think it takes someone with a lot of patience. Someone who is loving, and caring, and nurturing. Somebody who can see the perspective of the parent and figure out what a parent would need and sit back and look at the perspective of the child and what the child is going through. And what they are trying to communicate. And what their needs might be, even if they can't communicate those.

Though personality traits appear to be an important part of quality for directors, they also highlighted the interrelatedness of experience and education and how they work together with personality to provide higher quality. Directors expressed a consensus about the role of experience, education, and personality in promoting high quality including directors representing urban and non-urban centers with both large and small capacities and various business types.

Director 1 highlights the relationship saying:

A teacher has to be loving, obviously, and stuff like that. But I don't necessarily think that a teacher needs a degree to be a good teacher.

Obviously it's nice to have that experience and stuff like that, but a lot of times when you are going to school, you don't get the experience, you get the educational level. . . I think experience is a really good thing. I honestly look for a personality that's fun loving . . . someone who can deal with the chaos and still be laughing and come back the next day.

Director 6 said:

I think the more education you have, the better equipped you are. There are lots and lots of education [types], I mean, I'm not saying you necessarily have to have your college degree 100 percent. Because just a college degree in and of itself doesn't mean anything. You can have lots of book time and lots of class time, but you haven't had the experience. . .

I think education plays a huge key role into the traits [caregiver characteristics] and then also, you can take care of an infant but you also have to have a love there. . . so putting the right people to work in an infant classroom is one of the huge key players because you can have a warm body or you can have a person who is completely in love with the infants and they know how to handle their stress. . .

Director 5 added, "I don't think education is a big factor; most of the time it has to do with experience with a teacher. They bring quality with them if they have been there a

long time and actually understand.” Similarly, Director 4 stated, “I don’t think that having someone with a background in early childhood is essential at all. Some of my best teachers have come from other fields or have been high school graduates with no training at all.”

These directors all shared the idea that education in terms of college level early childhood training appears to make a minimal contribution to the quality of the classroom, while experience and positive personality traits translate into high quality classrooms. However, these same directors also highlight that the specialized IT training and the coaching and mentoring from an IT specialist made a contribution to the quality of their program. All seven directors suggest that training and coaching for their staff contribute to the quality of their programs.

Director 1 described the training with the ITERS-R:

It’s kind of hard when you take classes at like a university because they don’t really discuss what infant child care looks like. So it [the ITERS-R] gave us a basis of this is what it looks like [IT quality] . . . So the introduction to the ITERS made it so that you kind of look and said, “Okay, this is what I need to improve on to make my classroom better. . . It gave me a picture of IT care.”

Director 5 shared similar feelings about the training and coaching from *Baby Steps* and its role in contributing to quality, saying:

[The teachers] know what is expected to be out for [the children], available for the children to play with. You know you can walk into a

classroom and see that there are so many books out, so many different kinds of manipulatives for them to play with. They are really careful about moving the children around from place to place; they don't want them to stay in one area too long. They worry about the little ones being cared for compared to those who are getting around and are mobile. I think those are the biggest things they have learned from that . . . They are very careful about what happens during the day and making sure the kids have a lot to interact with as far as toys and activities.

Director 2 commented that the training and coaching led to changes in the environment and in staff behavior which contributed to quality:

I think definitely *Baby Steps* makes you think about your environment and the way your classroom is set up, and how you handle routines and stuff throughout your day. And then, of course, it just makes you more aware of those health and safety things (referring to subscale 2) and how important it is to stay on top of that. So as far as changes, I think it probably changed us as teachers more than our actual environment . . . I think it changed our attitudes a little bit about what we did . . . you see it is a better way to do things and it works just as well, if not better, than your old way. You want to keep doing it.

Director 7 found that the training and coaching gave the staff a sense of worth and support, which she identified as contributing to quality, stating:

I think along with the training it just kind of gives you the sense that

you're doing something worthwhile. And it is always fun to go to trainings, because then you can talk with others who really understand what you're doing.

Caregiver characteristics appear to be one of the primary contributors to higher quality that all center directors experience, though some may experience the role of caregiver characteristics more through personality traits, while others focus on the relationship between education and experience. All seven directors were in agreement that the *Baby Steps* program, with the coaching and training, was an important contributor to the quality of their program through the impact on caregiver knowledge and expectations.

Classroom environment and materials. The seven directors also identified the role of the environment and plentiful materials as contributing to quality. The contribution of environment and materials was categorized as a process quality characteristic as they are a part of children's day-to-day interactions.

Director 1 stated:

It [quality IT care] is a very calming, quiet, non-chaotic . . . I think it is a safe environment. It has to smell clean and look like it has been sanitized. An updated facility. . . I think bright, cheerful . . . and then as far as developmental levels, toys or things that the teacher is [using to] helping them through the developmental stages. The developmental stages happen on their own at this age group but there needs to be other toys and materials to help and encourage them along.

Similarly, Director 7 said, “There are enough toys for the children to play with. The room is clean, and the kids seem to be happy and well cared for.” Director 6 described the role of the environment, saying, “You first have to start with the environment. You have to make sure you have the proper equipment and the proper things in the environment.”

The idea of proper materials and equipment in the environment was echoed by the four other directors. The importance of the environment that the children encounter in relation to high quality appears to be a value all seven directors hold, regardless of other center variables. However, this may also be a result of the *Baby Steps* project which provided funding for materials and equipment and the use of the ITERS-R, which focuses on environmental factors in its ratings.

Child care center/workplace environment. The child care center or workplace environment is one factor of the conceptual model that has rarely been investigated in relation to its impact on quality. This may be due to the unique factors in each center that interact to create the workplace environment. This hypothesis was evident in the interviews from the seven directors. A majority of directors suggested that aspects of the workplace environment contributed to the quality in their own program, but none mentioned the same aspect more than twice. Director 4 and Director 6 mentioned the role of collaboration among staff, and Directors 1 and 3 highlighted that their staff had willingness to change, which they attributed to quality improvement.

Directors also felt that when staff felt enjoyment and appreciation, those positive feelings contributed to the quality of the program. Director 2 put it simply, “If the

teachers are happy, the children are happy.”

Director 5 echoed this sentiment saying:

When [the teachers] are happy and they know that their family life is okay, they are a better provider here. I think that is a big factor. I really try to show them constantly how much I appreciate them. They have to know that you care about them. If you care about the teachers, they are going to care about the children. I think that is one big factor for quality.

Question 6: Are the Barriers and Contributors Identified by Center Directors Represented in the Quantitative Data?

Table 4 highlights how each of the director’s centers changed during their first year of *Baby Steps*. All but one center experienced gains within their first year of participation but only one center increased its score by one *SD*.

ITE. The quantitative data suggests that completing the 40 hour training component and obtaining an ITE has a significant impact on ITERS-R scores. Classrooms with at least one teacher with a completed ITE had significantly higher ITERS-R scores. This result is reflected in the qualitative data with all seven directors identifying the training as a contributor to quality. However, at T1 neither Director 6 nor Director 7 had anyone employed who had completed their ITE. Despite this, Director 6’s center is the only center to have experienced an observable increase in quality. While the ITE may be significant at creating quality change, the quantitative data may also be missing the active role of the IT specialists who provided onsite coaching to classrooms.

The center directors often would mention the training and the coaching in the same breath, not really differentiating the two.

Money. All seven directors, regardless of geographic location, center capacity, or business type, identified money as the primary barrier to higher quality. While money meant many different things for the directors (low wages, lack of benefits, and not enough materials or equipment), the quantitative data did not find any significant relationships between variables like classroom tuition or wages.

However, turnover does appear to impact quality scores, with classrooms with the most turnover experiencing significantly lower quality scores than those with the least turnover. Low wages and a lack of benefits leading to turnover were barriers stated by six of the seven directors. The quantitative findings would support the perceptions of the directors that turnover makes quality change difficult, while staff continuity is a contributor to quality.

Personality characteristics and workplace environment. Several contributors to quality identified by center directors were placed into the categories of caregiver characteristics and workplace environment. All of the directors suggested that these characteristics play a significant role in quality change. Unfortunately the data for the quantitative analysis is not sufficient to capture these domains.

Summary of Findings

Research questions 1 and 2 addressed quality change in classrooms from baseline to T1, and if differences at baseline existed between those classrooms that experienced

change and those that did not. Overall there was not a significant increase in classroom ITERS-R scores at T1, though there were significant increases in three subscales: space and furnishings, activities, and interactions. Classrooms were recoded into those that made gains in their ITERS-R score and those that did not. These two groups were then compared on the variables of urban/nonurban, turnover, wages, number of teachers with an ITE, tuition rates for the classroom, and baseline ITERS-R scores. Results indicated that the only significant difference was that classrooms that experienced gains had lower ITERS-R scores at baseline. When classrooms were regrouped by observable change categories, baseline ITERS-R scores were still significantly lower at baseline for those classrooms that had an observable increase in quality at T1. There was also a significant difference in urban/nonurban status for those centers that maintained and/or increased their scores.

To answer research questions 3 and 4, a mixed model analysis was used to explore quality change over time and if differences existed between classrooms over time. Results indicated that while there were no changes to classroom ITERS-R scores at T1, there was a significant increase in the average ITERS-R scores by T2. However, after T2 there were no other significant increases in scores and scores even appeared to decrease, though not significantly. Those classrooms that had at least one teacher with an ITE had significantly higher scores than those classrooms with none. Turnover was also linked to ITERS-R scores with classrooms with lower turnover having significantly higher scores than those with high turnover.

To answer question 5, semi-structured interviews from seven center directors were analyzed. All seven directors identified money as the primary barrier to high quality; five directors (four running non-profit centers) identified money as a barrier in terms of staffing continuity (low wages and no benefits leading to high turnover and a lack of continuity). Two directors, both from private for-profit centers, viewed money differently; indicating the lack of money prevented providing appropriate materials and equipment. This difference may indicate that for-profit and non-profit programs experience quality change differently.

Center directors also identified a number of factors that they perceived as contributing to quality, including personal characteristics of staff, training, education and experience, classroom environment, and the center/workplace environment. There was wider variation in the characteristics of the centers and their perceived contributors than there was with the barriers to quality.

Research question 6 compared the quantitative results with the qualitative results. While the importance of the ITE in contributing to higher ITERS-R scores was echoed by center directors, it may underestimate the role of onsite coaching and modeling, which many of the directors referred to as part of the training. The relationship between turnover and higher quality was also echoed by the center directors. Interestingly, two directors at private for-profit centers said they did not have an issue with turnover though the quantitative data showed that their turnover rates were similar to other centers who did perceive turnover as a significant barrier.

CHAPTER V

DISCUSSION

The following section presents a discussion of the results from this study in light of current research on quality change. The limitations, implications, and future directions are also discussed.

Research Goals

There is considerable evidence in the literature that high quality child care is linked to improved outcomes for children and strong agreement that most child care, especially IT child care, is of poor to minimal quality. Quality improvement initiatives, like *Baby Steps*, continue to be a primary method for states and communities to assist programs with raising the quality of care, though results from these projects remain mixed. With limited funding for IT child care it is important for states to have a clear understanding of the factors involved with quality change to better capitalize on what works to increase quality, improve child outcomes, and efficiently use limited public funding.

The goals of this study were to: (1) provide a comprehensive, longitudinal picture of quality change for IT classrooms participating in the *Baby Steps* project, and (2) provide an understanding of how center directors perceive barriers and contributors to quality improvement in IT care. These goals were achieved through the collection and analysis of data from 48 centers (86 classrooms) spread throughout urban and non-urban regions of Utah, and through semi-structured interviews collected from seven center

directors (four = urban and three = non-urban). Similar to other evaluations of quality improvement initiatives (Uttley & Horn, 2008; Weinstock et al., 2012) findings from this study suggest that actual quality improvement is minimal across time when examining average ITERS-R scores. However, this result may oversimplify the issue because additional findings suggest that quality improvement is not only the result of the interaction of complex factors that included easily measured caregiver, process, and structural characteristics, but also a result of more abstract concepts like personality traits, “experience,” and the center/workplace environment. The next section will discuss how the findings for each research question provide a more complete understanding of quality change in this sample of centers.

Research Question 1: Did Classrooms Improve in Quality During the First Year on *Baby Steps*?

Overall, classrooms did not significantly improve their ITERS-R scores from baseline to T1. However, as in previous research (Brown et al., 2008; Ma et al., 2011; Radnai-Griffin, 2011), an analysis of subscale scores did reveal significant increases in the three subscales of space and furnishings, activities, and interaction. Differences in the space and furnishing subscale and the activities subscale may be explained by the infusion of money that the *Baby Steps* project provided to centers to purchase needed furniture and materials to enhance the environment for each classroom. In an evaluation of a quality improvement project for rural IT programs Brown and colleagues (2008) noted this same increase and highlighted that the materials and equipment purchased can

increase item scores in the space and furnishings and activities subscales with little to no input from the teachers or caregivers. Increases in the interaction subscale may also be a result of grant money. Items in this scale include supervision, peer interaction, staff-child interaction, and discipline. Additional materials, room remodel projects, and additional equipment may change how teachers are able to supervise and interact with each child. Furthermore, as the number of appropriate materials and the physical environment improve, children may be more engaged in play, have enough materials to limit disputes, and may experience a safer environment. These may lead to higher teacher engagement and less use of inappropriate discipline.

It is also important to note, that while other studies have reported subscale analysis (Brown et al. 2008; Miller & Bogatova, 2009; Radnai-Griffin, 2011), findings from this study revealed that subscales were highly correlated with each other and the overall ITERS-R scores. Thus further subscale analysis was removed. These findings suggest that, while grant funding may help programs to improve some important aspects of quality, grant funding alone does not significantly increase overall quality. However, quality improvement initiatives should continue to examine subscales and individual item scores to coach programs to higher overall quality.

Research Question 2: Were There Baseline Differences in Classrooms That Related to Later Gains?

All classrooms were recoded into those that experienced gains in quality from baseline to T1 and those that had no change or decreased in quality. The baseline

differences examined included wages, number of teachers with an ITE, urban/non-urban, parent fees, and baseline quality (as measured with the ITERS-R). Findings indicated that centers in the gain category had significantly lower ITERS-R scores at baseline than those classrooms in the no gain category. This same pattern was observed when classrooms were recoded into the three observable change categories of decrease, maintain, or increase. These results indicate that classrooms with the most room for improvement experienced more improvement, while classrooms that scored higher initially on the ITERS-R were likely to remain stagnant or even decline in quality within the first year of participation. This finding is significant for policymakers as they look to invest limited quality improvement dollars. The findings suggest that investing in those centers with the lowest quality may provide greater increases in quality versus just funding all centers equally.

These findings also have significant implications for child outcomes. Setodji and colleagues (2013) found that classrooms that scored between 3.8 and 4.6 on the ITERS had a significant positive impact on children's cognitive scores, while classrooms scoring below that range made no impact, and classrooms above that range made a modest impact. Findings from this study suggest that quality improvement projects have the potential to increase quality in the lowest scoring classrooms, which may directly translate to improved cognitive scores for young children, if ITERS-R scores can rise above 3.8 and be maintained.

Differences between the number of teachers with the ITE and tuition rates both neared significance at T1. Wages, turnover, and geographic location were insignificant

in terms of differences at baseline between Gain and No Gain classrooms. However, when classrooms were recoded into observable change categories, geographic region appeared to have a significant impact with those in the increased group being more likely to be in the non-urban regions. This finding, coupled with the result that classrooms in the “increased” change category had lower baseline scores, supports previous research that found rural programs to be at an increased risk for providing low quality care (Austin et al., 1997; Brown et al., 2008). This indicates that non-urban classrooms in this study had the most room for improvement. Furthermore, these findings suggest that non-urban classrooms may have been especially receptive to the support and training provided through the *Baby Steps* program.

Research Question 3: Were There Gains in Subsequent Years of Participation on *Baby Steps*?

The paired sample *t* test and Model 2 of the mixed analysis revealed that there was a statistically significant increase from T1 to T2 for mean ITERS-R scores. However, after T2 mean scores did not continue to increase, and even decreased for those centers participating the longest (though not significantly). These findings indicate that short-term (one year or less) interventions may not provide enough time for programs to make changes but long-term programs (extending over multiple years) are also not effective. Results from this sample suggest that two years of intervention is an adequate amount of time for programs to make changes that increase quality. It is important to note that in 2010 (after this data was collected) the *Baby Steps* program changed to

provide two years of initial intervention. After the initial two years, programs apply for *Next Steps*, a follow up intervention designed to help classrooms maintain a score in the good quality range.

The limited change over time in ITERS-R scores supports previous research findings (Uttley & Horn, 2008; Weinstock et al., 2012). Weinstock and colleagues noted that the lack of significant findings from the PITC program was a result of the PITC intervention not being fully implemented for most programs (only 41.9% of centers completed the required training). Likewise, in the Uttley and Horn study, only six IT classrooms participated in the apprenticeship program, making it difficult to draw inferences about the results. Poor participation at the outset, high attrition, and a lack of implementation fidelity mean that some quality improvement initiatives are less effective over time.

The minimal effectiveness of quality change initiatives speaks to the fact that quality change is a complex challenge. Simply offering quality improvement interventions may not be enough to address the variety of issues involved. For example Weinstock and colleagues (2012) noted that the recession, beginning in 2008, may have impacted the PITC results as child care enrollment declined due to high unemployment. Centers that faced decreasing revenues may have had to make difficult decisions about investing in teacher training or program improvement. This may have also been a factor for many Utah child care providers. Director 7 noted in the qualitative interviews that the recession had an impact on the quality of child care in her program as families chose to go to less expensive programs and the local jobless rate increased.

**Research Question 4: Were There Differences in Classrooms
That Experienced Gains Across Time?**

ITE

While several factors did not appear to significantly impact ITERS-R scores, Model three of the mixed model analysis indicates that having at least one teacher in a classroom with an ITE contributed significantly to higher ITERS-R scores. However, as mentioned in Table 4, the percentage of classrooms that had at least one teacher with the ITE never exceeded 66% (T3). Those working on the ITE (having completed at least 10 hours of the 40 hour course) never exceeded 35%. The relatively low numbers of ITEs were observed despite the *Baby Steps* requirement that at least one teacher per classroom should obtain the ITE. High turnover rates may provide some explanation for the lack of teachers with ITEs. Teachers may not stay long enough in one classroom to complete the 40 hours of training. However, the lack of participation in the IT training, especially in light of its significant impact on increasing quality, is problematic and indicates that the training component was not implemented with fidelity. The *Baby Steps* administrators will need to find additional ways to enforce the training requirement.

Zaslow and colleagues (2010) recognized that, to date, little research on professional development among IT caregivers had been conducted. This finding has significant implications for the field in terms of the importance of specific in-service training and its resulting impact on classroom quality. The disparities in quality among IT classrooms and preschool classrooms indicate that factors like professional development can make a unique contribution to quality for differing age groups. Much

of the literature shows mixed results for the impact of professional development on quality, but the finding in this research that the ITE is related to higher quality supports Fukkink and Lont's (2007) assertion that specialized programs are likely more effective than universally administered programs.

Often discussions about improving quality focus on increasing wages and adding benefits. While these two factors would potentially create a stronger workforce, they are also difficult to achieve without additional and sustainable cash flows. However, if specialized training can improve IT classroom quality, this may be an attainable and cost effective route to obtaining higher quality if turnover can be controlled.

Turnover

High teacher turnover has long been recognized as problematic for the early care and education field and is linked to poor quality (Ahnert et al., 2006; Cryer et al., 2000; Helburn, 1995; Whitebook et al., 1998). According to the National Association for Child Care Resource and Referral Agencies (NACCRRA; 2012) the national average for turnover ranges from 25% to 40%. Mean turnover for this sample across the study period was 57%, with many programs experiencing 100% turnover multiple times.

Infant/Toddler programs in Utah appear to experience especially high turnover. Findings from this study continue to support the assertion that high turnover and low quality are inextricably linked. Often the relationship between turnover and low quality is explained through low wages. However, this study did not find wages playing a significant role in either turnover or quality. Utah may be unique as mean wages are relatively low for many Utahans, thus making turnover a stronger detriment to quality than lower wages.

Turnover and number of teachers with an ITE were highly negatively correlated. This provides an additional explanation for why the ITE leads to higher quality. Completing the 40 hours of training and putting into practice gained skills and knowledge takes time. As stated above, the classrooms that had higher turnover may not have had teachers who stayed long enough to complete the training; thus they were at a disadvantage, not only due to the high turnover and lack of continuity, but also because their teachers are not gaining the necessary skills and knowledge to address classroom quality.

Research Question 5: What Barriers and Contributors Do Center Directors Identify With Quality Change?

Personality Characteristics

Gaining the perspectives of center directors added valuable insight into the role of *Baby Steps* and highlights the factors that may lead to quality improvement. While the quantitative data provides some explanation of contributing factors, it does not reflect the role of individual personality characteristics to promoting quality. According to the seven directors, caregiver personality characteristics represent a major contribution to quality. Three directors asserted that quality IT care takes “hard work,” describing it as intense, intimate, and demanding. Director 1 concluded that “It takes a special person.” All seven directors also described caregiving quality being nurturing, caring, loving, and passionate. They said IT caregivers must be team players. As far as the researcher is aware to date, personality characteristics have only played a limited role in child care

research. These findings reinforce those from Brownlee and colleagues' (2009) qualitative study where directors described quality with words like "caring" and "loving." These inside-out perspectives suggest that quality rating scores and the structural and process characteristics on which researchers often focus may be missing an important factor in promoting higher quality. However, measuring "loving" and "caring" also presents a significant challenge for researchers.

Consumer Awareness

The interviews with the directors also provided insight into a barrier to achieving quality that may have been overlooked if the quantitative data were the only data source. Two directors identified a lack of consumer awareness about quality child care as a primary barrier to higher quality; several other directors suggested feelings of professionalism, value, and appreciation as contributors to quality. The same two directors felt families look for the cheapest form of child care, without considering the implications this has for their children and their later developmental outcomes. A sense of engaging in a professional endeavor may indeed be an important and understudied aspect of child care quality. Feelings that consumers are unaware of the components of quality child care could stem from the providers themselves not feeling that they are engaged in a professional activity or valued as professionals. Rohacek and colleagues (2010) found that directors who had lower professional expectations for staff also directed centers with lower quality scores. Investigating caregivers and teachers' perceptions of their roles may provide new insight into ways to promote higher quality.

**Research Question 6: Are the Qualitative Barriers and Contributors
Reflected in the Quantitative Data?**

From both the inside-out (director interviews) and top-down (quantitative data) perspectives, centers and classrooms experience barriers and contributors that are universal among centers, and also unique to each center. The present results support the conceptual model (Figures 1 and 3) by suggesting that high quality is both the product of individual factors and the product of interactions among those factors (i.e., structural, caregiver, and center/workplace characteristics).

The intersection of factors is evident in the differences between for-profit and nonprofit programs. Though a small sample size limits conclusions, results from this study suggest that private for-profit programs may view quality less in terms of teacher characteristics, and more in terms of process and structural factors. One explanation is that they are more invested in the physical structure of the program, and more concerned with finances. Non-profit programs appear to focus on teacher characteristics and investing in teacher skills if they are housed within a larger agency and receive some additional support from that agency (i.e., free rent, etc.). An understanding of how different business types perceive quality would allow for a more targeted approach in quality improvement initiatives. Private for-profit programs may potentially benefit more from funding for environmental upgrades and materials and non-profit programs may benefit more from funding aimed at supporting their staff. Future research should examine how business types may impact the definition of quality and the ability to increase quality.

Another set of findings that provides support for the conceptual model (Figures 1 and 3) are the relationships between turnover, the ITE, and quality scores. Turnover was stated as a barrier to higher quality by all the directors, regardless of other variables, and the quantitative data also found turnover to be significantly higher in classrooms with lower scores. Likewise, having at least one teacher with ITE was significantly more prevalent in classrooms with higher scores, a finding corroborated by all of the directors who felt that the training from *Baby Steps* contributed to higher quality. However, turnover and ITE were highly negatively correlated. Thus while specialized training does increase quality, if turnover is not minimized, the impact of training is reduced. Quality improvement initiatives should account for turnover rates in programs and work to decrease turnover while also increasing training.

These findings have significant implications for the field as quality improvement projects typically provide a universal program of training, grants, and coaching, but neglect to focus on individual program needs. To see the best results in quality improvement, initiatives should begin by assessing at the onset, a variety of factors including personal characteristics, turnover rates, workplace environment, and director perceptions, and then develop, with the director, a target approach to best meet the program's individual needs.

Limitations

Similar to other non-experimental design studies, this study presents a number of limitations. High attrition of participating programs limit the ability to make longitudinal

generalizations. However, the repeated pattern of high attrition (also observed in Campbell & Millbourne, 2005; Ma et al., 2011; Miller & Bogatova, 2009; Weinstock et al., 2012) suggests that quality improvement interventions that take place over several years may not be practical or justified.

Secondly, though centers were well distributed throughout the state, the sample represents just under half of the centers that participated in the *Baby Steps* project and selection bias may exist. With minimal data to compare the programs that agreed to participate in the research and those that did not, it cannot be determined if differences exist between the participating and non-participating groups that could invalidate the conclusions of this study. Furthermore, *Baby Steps* participating centers only represent half of all centers in Utah. The centers that chose to participate in *Baby Steps* may be different from those centers that chose not to participate. Despite this limitation, the ITERS-R scores were normally distributed, centers represented all regions in the state, and initial sample size was similar to, or larger, than other evaluations of quality improvement projects (i.e., Brown et al., 2008; Ma et al., 2011; Whitebook et al., 2004). However, generalizations about the results should be made cautiously. Similarly, since the qualitative data were gathered from a small sample ($N = 7$) generalizability is limited and the findings should be viewed with caution.

The third limitation of the data is that all data, except ITERS-R scores, were self-reported by the center directors or program administrators. This resulted in differing samples sizes for each variable as some centers chose not to report every requested demographic (i.e., wages, tuition rates, etc.) every year. The mixed model analysis was

used to account for the missing data as it over-estimates the error terms. While the self-reporting and resulting missing data present a limitation to this study and its generalizability, it is important to note that this type of data is prevalent when evaluating real world programs that use self-report, experience significant attrition, and have limited resources that prevent experimental designs.

The results of this study are also limited by the ITERS-R collection methods. Protocols were in place to ensure inter-rater reliability throughout the seven years. However, the IT specialists who provided the onsite coaching and support were also the ITERS-R raters. This may introduce a level of bias into the ITERS-R scores with specialists being familiar with classrooms and wanting to see classrooms succeed. ITERS-R results were also shared with the staff and directors at each center at each time-point as a tool for quality improvement. This has the potential for introducing a significant test/retest issue as centers and classrooms would naturally become more familiar with the tool over time. Like the missing data, the mixed model was specifically chosen to handle the violation of independent observations that is prevalent in longitudinal research.

It should also be noted that implementation fidelity of the *Baby Steps* project was not assessed in this research study. Conclusions about the efficacy of the project are limited and should be taken cautiously as this study does not address the consistent implementation of training or coaching, which may have differed by region or specialist. The participation and completion rates of the ITE would suggest that training was not delivered as intended, and brings into question the program fidelity.

Lastly, interview data was collected by the researcher with three interviews being conducted by phone and four interviews conducted in person. This may have led to differing responses from directors as the in-person interviews allowed more time for the researcher to develop a rapport with the directors, which may have led them to increase the level of detail they included in their responses. To mitigate this, all interviews were structured following the interview protocol with the same questions being asked in the same order. However, following a semi-structured format, each question left room for additional follow-up questions based on the participant's response.

Implications

This study provides a unique contribution to the field of early care and education by presenting a mixed methods analysis of the factors that contribute to quality change for IT programs participating in a quality improvement initiative. Supported by previous literature, the quantitative results from the mixed model analysis suggest that specific training for teachers in IT care and development is a factor associated with higher quality. Training mandates for licensing and QRIS should consider including training that is specialized to the IT work force. The qualitative interview responses also suggest that it is the specialized training that should be considered more than formal education levels when assessing how teachers facilitate quality in their classrooms.

High turnover rates and a lack of teacher continuity were significant barriers to quality in both the qualitative and quantitative results. While this has direct implications for child outcomes in those classrooms experiencing high turnover, it may be out of the

control of center administrators to change due to the low wages and lack of benefits associated with IT teachers. The high rates of turnover are especially concerning given the implications for quality. As the center directors identified, a lack of money (most often suggested in terms of wages and benefits) is the primary barrier to achieving higher quality. Consumer awareness needs to drive policy change to increase outside funding to child care programs, providing teachers with a livable and worthy wage that represents the training, education, and experience they present and recognizes the significant impact they have on children's development.

A third implication of the results of this study can be drawn from the conclusion that classrooms experiencing the lowest level of quality may be the most responsive to quality improvement initiatives. This is an especially important consideration for programs delivering quality improvement initiatives. With limited funding streams quality improvement initiatives may be more impactful for improving quality if they focus funding on those classrooms that most need it. Research has shown that it is the poorest quality environments that have the most negative impacts on child outcomes; thus, facilitating quality increase in these programs may be a better use of funding than a blanket approach.

Lastly, findings from this study continue to support an ecological conceptual model of child care quality that recognizes a variety of factors and their interrelationships as leading to higher quality. This suggests that quality change is not as simple as infusing programs with limited grant funding and requiring training. Furthermore, this study also supports the recognition that the top-down and inside-out perspectives may have differing

views on the factors that contribute to quality. Policymakers, QRIS administrators, and future researchers need to recognize that factors may exist (such as individual personality traits) that have yet to be measured in terms of their impact on quality and that it is often these characteristics that are the most difficult to change but may have the most impact.

Future Directions

While this study presents several limitations in terms of generalizability, the results and implications provide insight for continued study of quality improvement initiatives. As demands for results from new and existing QRIS systems and other quality improvement initiatives increase, researchers and policymakers need to understand and recognize that factors beyond turnover, wages, professional development, training, and education may impact quality and quality change. Specifically, insights from the seven director interviews suggest three areas of research that have yet to be fully understood in terms of the contribution to quality:

1. Understanding the role of individual personality characteristics of teachers and program administrators and their contributions to quality.
2. Assessing the center/workplace environment and understanding how characteristics of the workplace environment interact with other process and structural characteristics to produce higher quality environments.
3. Understanding the role of “readiness to change” in actual quality improvement for classrooms and centers and exploring whether this is a personal attribute of an individual teacher or administrator or a center-wide attribute.

For policymakers and those delivering *Baby Steps* and similar programs, results from this study point to needed changes in program delivery. Specifically, the resources of quality improvement initiatives should be focused on those programs that have the lowest quality. By investing in the low quality programs, quality change is more likely to be in the positive direction and facilitate an impact on child outcomes.

Conclusion

Child care quality and ways to increase it should be an important topic for the early childhood field, families who access child care services, and the policymakers who develop pathways for change and improvement. As the demand for accountability and evaluation of QRIS's and other quality improvement initiatives continues, it becomes increasingly important that stakeholders have a clear understanding of the factors that lead to quality change. To date, research on quality change has primarily been conducted from a top-down perspective (Katz, 1993), and has rarely considered other perspectives. This study provides a unique contribution as it examines both a top-down perspective and inside-out perspective in a detailed comparison. By taking these two perspectives together, this study supports prior research in emphasizing the value of in-service specialized training and its contribution to creating higher quality classrooms. Findings from this study also continue to support recognition that high turnover and low staff continuity present barriers to achieving and maintaining higher quality classrooms. Lastly, this study provides a new understanding of the unique contributions of personal

characteristics and workplace environments on quality and suggests that further research is needed in this area to truly understand how quality improvement is achieved.

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APPENDICES

Appendix A. Interview Questions

Global Quality Change through the Baby Steps Project for Infant and Toddler Child Care Programs in Rural and Urban Utah

Interview Questions

1. Share with me a little about your center, your infant and toddler program, and your role within the program.
2. From your perspective, what do you think quality infant and toddler child care means? Are there specific things that demonstrate quality?
3. To what extent do you feel participation in *Baby Steps* made a difference in the quality of your infant and toddler program?

Follow Up Question: Any specific stories about working with *Baby Steps* you would like to share?

4. In general, what barriers or difficulties do you think exist when it comes to improving quality in infant and toddler child care?

Follow Up Question: Please describe some of the community and/or economic factors that you perceive to be a barrier in terms of improving infant and toddler child care.

5. To what extent do any of those barriers or difficulties apply to your program?
6. In general what do you think contributes to quality in infant and toddler child care?

Follow Up: For example, you listed several components above (see question 2), how do they contribute to quality?

Appendix B. Data Collection Forms

Baby Steps Data Collection Form

Center ID	ACT	Box # and Location	Date of Collection		
# of Years on Baby Steps		# of Classrooms on Babysteps			
Center Demographics					
Child Care Type:	Private/For Profit:	Non-Profit:	Corporation/For Profit:	Other:	Accreditation Status:
Total Center Capacity:					Yes No In Process
Number of Baby Steps Classrooms in Center:					
Age Groups Center Serves:	Under 2:	Preschool and Kindergarten:	Elementary:		
Capacity for Specific Age Group:	Under 2:	Preschool and Kindergarten:	Elementary:		
# of Rooms per Age Group:	Under 2:	Preschool and Kindergarten:	Elementary:		
Percent of center children on DWS Subsidy:					
Baby Steps Classroom Data	Year 1	Year 2	Year 3	Year 4	Year 5
Classroom 1					
Number of Children in Baby Steps Classroom:					
Age Range of Children in Baby Steps Classroom:					
Rate for Care					
Number of Teachers in Classroom:					
Estimated Turnover Rate for Classroom:					
Classroom 2					
Number of Children in Baby Steps Classroom:					
Age Range of Children in Baby Steps Classroom:					
Rate for Care					
Number of Teachers in Classroom:					
Estimated Turnover Rate for Classroom:					
Teacher Information	Year 1	Year 2	Year 3	Year 4	Year 5
Teacher 1:					
Classroom #/Position:					
Career Ladder Level:					
Infant/Toddler Endorsement:					
Time Employed with Center					
Wages					
Benefits					
Teacher Education					
Teacher 2:					
Classroom #/Position:					
Career Ladder Level:					
Infant/Toddler Endorsement:					
Time Employed with Center					
Wages					
Benefits					
Teacher Education					
Teacher 3:					
Classroom #/Position:					
Career Ladder Level:					
Infant/Toddler Endorsement:					
Time Employed with Center					
Wages					
Benefits					
Teacher Education					

ITERS R Data Collection Form

ID Number:

Date of ITERS:

Total Score:

of Indicators Scored:

of Caregivers:

Average:

Classroom:

Birthdate of Youngest Child:

Birthdate of Oldest Child:

ITEM **SCORES**

Subscale 1: Space and Furnishings

1. Indoor Space	
2. Furniture for routine care and play	
3. Provision for relaxation and comfort	
4. Room arrangement	
5. Display for children	
Total	0

Subscale 2: Personal Care Routines

6. Greeting/departing	
7. Meals/snacks	
8. Nap	
9. Diapering/toileting	
10. Health practices	
11. Safety practices	
Total	0

Subscale 3: Listening and Talking

12. Helping children understand language	
13. Helping children use language	
14. Using books	
Total	0

Subscale 4: Activities

15. Fine motor	
16. Active physical play	
17. Art	
18. Music and movement	
19. Blocks	
20. Dramatic play	
21. Sand and water play	
22. Nature/science	
23. Use of TV, video, and/or computers	
24. Promoting acceptance of diversity	
Total	0

Appendix C. Informed Consent



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 USU IRB Certificate of Exemption: July 7, 2011
 Exemption Terminates: 07/06/2014
 Protocol #2959
 IRB Password Protected per IRB Administrator

INFORMED CONSENT

Global Quality Change through the Baby Steps Project for Infant and Toddler Child Care Program in Rural and Urban Utah

Introduction/ Purpose Professor Ann Berghout Austin and graduate student Maegan Lokteff in the Department of Family, Consumer and Human Development at Utah State University in conjunction with the Office of Child Care in the Department of Workforce Services, are conducting a research study to find out more about how participation in the Baby Steps Project has influenced your center's infant and toddler care program. Your center has been asked to take part because you have been or currently are, participating in the Baby Steps Project. There will be approximately 130 total centers in this research study.

Procedures If you agree for your center to be in this research study, the following will happen.

1. The above-named researchers will have access to your center's Baby Steps file. This file was compiled, and is maintained by the Department of Workforce Services Office of Child Care to document your centers involvement in Baby Steps. The file contains demographic information for your center, wage data, and Infant/Toddler Environment Rating Scale scores. If you participated in the Infant Toddler Quality Improvement Grant between 2001 and 2003 those ITERS Scores may also be included in this data.
2. Austin and Lokteff will compile the file data and will summarize scores across centers to provide a summary statement of the experiences centers have had in Baby Steps.

New Findings During the course of this research study, you will be informed of any significant new findings (either good or bad), such as changes in the risks or benefits resulting from participation in the research, or new alternatives to participation that might cause you to change your mind about continuing in the study. If new information is obtained that is relevant or useful to you, or if the procedures and/or methods change at any time throughout this study, your consent to continue participating in this study will be obtained again.

Risks Participation in this research study may involve some added risks or discomforts. These include: an inadvertent disclosure about center information. To reduce this risk the researchers will take precautions to maintain center confidentiality. Scores and information gathered from the research will only be presented in summary fashion and individual centers will not be named or identified in any way.

Benefits There may or may not be any direct benefit to you from these procedures. The investigator, however, may learn more about how technical assistance programs and training can better meet the needs of child care centers, specifically those with infant and toddler programs. They may also learn more about specific interactions or strategies in the Baby Steps Project that prove helpful to centers which could enhance future services.

Explanation & offer to answer questions If you have other questions or research-related problems, you may reach Maegan Lokteff at 435-797-2228 or email her at maegan.lokteff@aggiemail.usu.edu or Dr. Austin at 435-797-1527 or email her at ann.austin@usu.edu.



Page 2 of 2
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INFORMED CONSENT

Global Quality Change through the Baby Steps Project for Infant and Toddler Child Care Program in Rural and Urban Utah

Voluntary nature of participation and right to withdraw without consequence Participation in research is entirely voluntary. You may decline to participate or withdraw at any time without consequence or loss of benefits. The Department of Workforce Services and the Office of Child Care will not be made aware of your choice to participate or not participate in the research. Choosing not to participate in no way will affect the services you currently receive or may receive in the future from DWS or the Baby Steps Project.

Confidentiality Research records will be kept confidential, consistent with federal and state regulations. Only Dr. Austin, Maegan Lokteff, and Jylisa Doney (a research assistant) will have access to the data, which will be kept in a locked file cabinet in a locked room. Personal, identifiable information will be kept for three years and will be kept in a separate locked cabinet from the data in a locked room, then, personal identifiable information will be destroyed.

IRB Approval Statement The Institutional Review Board for the protection of human participants at USU has approved this research study. If you have any pertinent questions or concerns about your rights or a research-related injury, you may contact the IRB Administrator at (435) 797-0567 or email irb@usu.edu. If you have a concern or complaint about the research and you would like to contact someone other than the research team, you may contact the IRB Administrator to obtain information or to offer input.

Copy of consent You have been given two copies of this Informed Consent. Please sign both copies and retain one copy for your files.

Investigator Statement "I certify that this research study has been explained to the individual, by me or my research staff, and that the individual understands the nature and purpose of this study, what information will be gathered for this study, and the possible risks and benefits associated with taking part in this study. Any questions that have been raised have been answered."

Ann Berghout Austin, Principal Investigator
435-797-1527
ann.austin@usu.edu

Maegan Lokteff, Student Researcher
435-797-2228
maegan.lokteff@aggiemail.usu.edu

Signature of Child Care Center Director/Owner By signing below, I agree to participate.

Director/Owner

Date

CURRICULUM VITAE

Maegan Lokteff

1255 North 225 East

Logan, Utah 84341

530-945-2597

mlokteff2@gmail.com

Education

PhD in Family and Human Development

Utah State University, Logan, Utah

Expected Graduation: Spring 2014

Dissertation: Global Quality Change through the Baby Steps Project for Infant and Toddler Child Care Programs in Rural and Urban Utah

Committee Chair: Dr. Ann Berghout Austin

Bachelor of Science in Child Development and Family Relations

Bachelor of Science in Recreation

University of Idaho, Moscow, Idaho

Graduation: December 2001

Experience***Teaching Experience****Graduate Instructor**Summer 2010 – Summer 2012*

Courses Included:

Developed and facilitated online and face-to-face courses for Utah State University, including multiple semesters of human development in both online and face-to-face formats, and an online infancy and early childhood course.

Duties include course development and design, delivering materials to meet the needs of diverse learners, grading, and addressing student concerns for approximately 150 students per semester.

*Child Care Resource and Referral Trainer**Summer 2010 – Current*

Teach/facilitate 10 hour trainings for child care providers as mandated by the State of Utah's Office of Child Care. Trainings taught have covered school age care and development, professional development, observation and assessment, child development and theories, and guidance practices.

*Teaching Assistant**Fall 2009 – Spring 2010*

Provided assistance and support in the teaching of FHCD 2610 Child Guidance. Responsibilities included maintaining student grades and attendance, grading major papers and exams. Assisted with teaching, course prep and exam preparation.

Research Experience*Baby Steps Project**2010 – 2014*

Work includes the development and implementation of research on the state quality improvement initiative Baby Steps. Responsibilities include coordinating research questions and design with the Department of Workforce Services, oversight of undergraduate research assistants, data entry and analysis, and grant oversight.

*Child Care Access Means Parents in School**2009-2010*

CCAMPIS, conducting assessments with children and families participating in the CCAMPIS grant, completing CCAMPIS grant reports for the Department of Education, and data entry and analysis.

Programmatic Experience*USU Dolores Doré Eccles Center for Early Care and Education* *Spring 2012-Current*

Program Administrator for campus child care center serving approximately 75 children ages six weeks through school age. Responsibilities include oversight of day-to-day operations, teacher and student supervision, mentoring and evaluation, family interaction, budgeting, grants, and center administration. Also responsible for NAEYC Accreditation and state licensing.

*Child Care Resource and Referral**Summer 2010-Spring 2012*

Responsibilities include coordinating and implementing supportive services and technical assistance to center child care providers pursuing their Child Development Associates Credential, technical support for programs pursuing national accreditation, and general support to fulfill state contracts.

*Shasta Women's Refuge**Winter 2006-Summer 2009*

Children's Program Coordinator providing oversight for all aspects of the Children, Too! Program including grant oversight, grant applications, curriculum development, parent education, children's groups, budgets, media, public relations, community outreach and supervision of staff and volunteers.

*North Woods Discovery School**Fall 2004-Winter 2006*

Supervisor for after school program and director of summer day camp program. Duties include staff supervision, training and evaluation, budgeting, program development, daily relations with parents and contracting services with various government agencies.

*Steamboat Ski and Resort Corporation**Fall 2002-Spring 2004*

Supervisor for staff and guest child care programs. Responsible for all aspects of program oversight including staffing, training, billing, budgets, public relations, licensing compliance, and curriculum planning for children in infancy through school-age.

*Moscow School District #281 After School Program**Fall 1998-Spring 2002*

Promoted from group leader to site supervisor. Duties included daily programming, supervision of staff and children, public relations with school and community, and daily parent contact. Assisted with administrative duties including creating a staff manual, programming for summer, and receiving payments.

Publications***Peer Reviewed***

Austin, A.B., Blevins-Knabe, B., & Lokteff, M. (2012). Early mathematics and phonological awareness in two child care settings. *Early Child Development and Care*. DOI 10.1080/03004430.2012.716832

Lokteff, M. & Piercy, K. (2011). "Who cares for the children?" Lessons from a global perspective on child care policy. *Journal of Child and Family Studies*, 21(1), 120-130. DOI 10.1007/s10826-011-9467-y

Lokteff, M. (2010). The brains of emerging adults, risk taking, and the consequences for camps. *Camping Magazine*, 83(5), 48-51.

Other Publications

Grove, E., Hansen, M., Dowd, J., Buchanan, E. Reimers, F., Willoughby, S., Lokteff, M., Pierce, G., Rea. M. (2003). Fountain of youth: Old schoolers who still rock the boat: 20 paddlers over 60 who stay young with paddling. *Paddler*, 23 (5), 40 -47.

Grants

Austin, A.B., & Lokteff, M. (2011). Co-wrote a funded grant for the amount of \$20,000 per year for three years with PI, Ann Berghout Austin. Utah State University Agriculture Experiment Station.

Boyce, L., & Lokteff, M. (2012). Utah Department of Workforce Services Office of Child Care. Co-wrote a funded quality improvement grant for the Dolores Doré Eccles Center for Early Care and Education for the amount of \$36,000 with PI Lisa Boyce.

Boyce, L., & Lokteff, M. (2012). Utah Department of Workforce Services Office of Child Care Co-wrote a funded Baby Steps/Next Steps grant for the Dolores Doré Eccles Center for Early Care and Education for the amount of \$4,400 annually for two years with PI Lisa Boyce.

Dickerson, L., & Lokteff, M. (2005 to 2009). *First 5 Shasta*. Oversaw grant expenditures, wrote quarterly and annual reports, and prepared and negotiated the funded reapplication in 2009 for approximately \$35,000/year for five years.

Presentations

Lokteff, M., Austin, A.B., & Loesch, L. (2014). *Mixed methods: A practical solution for real world data*. Society for Research in Human Development Biennial Meeting, Texas.

Lokteff, M., & Austin, A.B. (2013) *Baseline differences in centers experiencing gains and no gains while participating in an infant and toddler quality improvement system*. Society for Research on Child Development Biennial Conference, Washington.

Lokteff, M., Austin, A.B., & Doney, J. (2012). *Taking baby steps: Results from a state wide initiative to increase quality in infant and toddler center care*. National

Association for the Education of Young Children Professional Development Institute, Indiana.

Lokteff, M. (2012). *Practical and theoretical issues with assessing the implementation of a state-wide quality improvement initiative for infant and toddler center care.* Society for Research in Human Development Biennial Meeting, Louisiana.

Lokteff, M., & Piercy, K. (2011). *“Who Cares for the Children?” Lessons from global perspective on child care policy.* National Council for Family Relations 73rd Annual Conference, Florida.

Lokteff, M., Austin, A.B., & Rowe, T. (2011). *Non-traditional college students’ parenting stress and social and emotional development in infancy and early childhood.* (Poster Presentation). Society for Research on Child Development Biennial Conference, Canada.

Austin, A.B., Blevins-Knabe, B., & Lokteff, M. (2011). *Predictors of early mathematics proficiency.* (Poster Presentation). Society for Research on Child Development Biennial Conference, Canada.

Lokteff, M. (2010). *Common child care behavior problems and tools for coping with them.* CHILD Conference, Utah.

Lokteff, M. (2009). *Non therapeutic interventions for challenging children/beyond consequences.* Didactic Interventions Training, California.

Service

Society for Research in Human Development Student Reviewer for the 2012 Biennial Meeting.

National Association for the Education of Young Children Student Reviewer for the 2011 National Conference.

Society for Research in Child Development (SRCD) - Mentor Pair Review team for 2011 SRCD Biennial Meeting with Ann Austin, Ph.D.

Shasta County Domestic Violence Coordinating Council (2005-2009). Co-Chair of Children’s Sub Committee.

Shasta County Local Child Care Planning Council Member (2007-2009).

Organization Memberships

Society for Research in Child Development

Society for Research in Human Development

National Association for the Education of Young Children